Railway Age

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Can Railroad Valuation Be Settled?

THE decision of the Supreme Court in the O'Fallon case settled the important question of whether the Interstate Commerce Commission must give weight to costs of reproduction in making valuations. It left unsettled the amount of weight the commission must give to costs of reproduction. It also left unsettled numerous other important questions of principle, such as those relating to depreciation and going value. In fact, while the decision settled one important question of principle, apparently it will be a very long time before final valuations can be arrived at which can be used as bases for regulation of rates and recapture of earnings, unless there shall be adopted some very different methods for arriving at them from those which have been employed up to the present time.

It is desirable that the matter of valuation shall be disposed of as soon as may be reasonably practicable. If valuations will be of no practical use, the sooner the project for making them is abandoned the better it will be. If they can and should be used in the ways intended by those who have favored making them, the sooner they are finished in some reasonable way the better it will be.

Litigation an Interminable Process

The questions of principle involved, and the way in which the principles accepted shall be applied to the facts regarding different railroad properties, might conceivably be settled by the processes of litigation, first, before the commission, then in the courts, and then again before the commission. Every case that goes to the courts in which the commission is not upheld probably will have to go back before the commission. There are numerous important principles involved, and there are hundreds of railroads to the facts regarding the properties of which these principles must be applied. Because of differences in their probable costs of reproduction, in their earning capacities and so on, different railways attach widely differing degrees of importance to the various principles involved. If the processes of litigation are to be mainly or exclusively used in arriving at the valuations of the various railways, the attempt to make valuations of all of them will be interminable. It already has been carried on for 16 years and has cost the railway and the government about $150,000,000. Why continue to try to do an important piece of work in a way which promises endless expense and no practical results?

Is There a Practical Method?

The objectives aimed at are valuations of individual railways which will serve as fair bases for the determination of "excess" earnings and which, when added together, will make an aggregate valuation for each large group of railways that can be fairly used in the regulation of rates. What difference will it make how much weight is given to each factor—original cost of construction, cost of reproduction, depreciation, going value, working capital, and so on—if the final valuation of each road or each group of roads is reasonable? Of course, in the making of the valuation of each railway weight should be given to every important principle and fact; but who has yet invented any formula that would be satisfactory to anybody but himself for making a valuation of any railway, much less of every railway? The courts have well said that valuation is not a matter of formulas.

All the facts of each case could be considered in formal hearings. But, as already indicated, that would mean use of the interminable processes of litigation. Is it inconceivable that a general agreement regarding the principles to be applied could be arrived at in conferences between the Interstate Commerce Commission and representatives of all the railways, and that then the facts in each case and the application of these principles to them could be satisfactorily considered in informal conferences between representatives of the Interstate Commerce Commission and officers of the individual railways? It might be found at the end of such conferences that there was a nearer approach to agreement as to what the final valuation of each railroad should be than had seemed probable at the beginning of them. If so, might not such differences as remained be compromised and final valuations agreed upon? If the final valuation of each railway should be thus arrived at, the problem of making a valuation of all railways would, of course, be solved.

There are not wanting precedents for the use of such

methods. They were used with reasonably satisfactory results in settling the accounts of the railways with the government after the termination of federal control. There is much more involved in valuation. If the commission should insist upon a policy of valuation such as it favored in the O'Fallon case, and the railways should make a stand for valuations based on cost of reproduction without depreciation, there would be perfectly enormous differences involved; but it does not seem fair to the commission or railway officers to assume that both sides would be wholly unreasonable.

The decision of the Supreme Court in the O'Fallon case has made it certain that it would be futile for the commission to attempt further to make valuations in accordance with the principles and methods it favored in that case. On the other hand what advantage would the railways gain by trying to get valuations greatly in excess of their property investment? Experience indicates that an average annual return of 5¾ per cent on the property investment shown by their books would be sufficient for their needs. If this is the case they would simply be inviting trouble for themselves if they persistently tried to get a valuation greatly in excess of their property investment.

Considering all the circumstances it does seem that it would be well worth while to try by some other method than that of interminable litigation to solve the problem of valuation.

Suppressing Crime on Railways

IN the face of a widespread increase in crime in general, the marked decrease in railway robberies stands out in noteworthy fashion. In 1920, the Class I railways of the United States lost $12,727,947 by robberies. Since that year, these losses have gone steadily downward, and in 1928 they amounted to only $928,563, a decrease of 93 per cent in eight years. Indications are that 1929 will see a still further reduction, since the losses in the first quarter of the year were $66,228 less than those for the same period last year. The efficiency of the railway police is further attested to by the fact that during the last few years they have averaged 97 convictions to every 100 arrests made, a record that cannot be approached by any municipal police department.

One of the reasons for this remarkable efficiency is to be found in the fact that the railway police are following the policy of the United States secret service, of closing no case until it is cleaned up, and of pursuing criminals relentlessly until they are captured. Card sharpers, confidence men, and thieves who steal trunks by switching baggage checks, have practically been driven from American railroads, and passengers and shippers may now rely upon almost complete protection. Plain-clothes men are detailed to watch the trains on which such criminals are likely to operate, and when the traffic is unusually heavy, special agents ride the trains as an additional precaution. Owing to the tremendous strides made in the last few years in suppressing crime on railway property, a passenger train is among the safest of all places for people and a freight train the safest place for merchandise.

Distant Terminals

WHERE circumstances permit, it is, of course, desirable to establish classification yards as close as possible to the points of origin or delivery of traffic but the experience of several railways recently has proved that this is not necessarily essential to efficient operation.

Railway yards, particularly those built within city limits many years ago, are frequently inadequate to handle the present-day traffic. It is not always a simple or inexpensive proposition to enlarge such yards to meet modern needs. Industries, and, in some cases, residential districts, have been built up in the vicinity of, and not infrequently immediately adjacent to such railway yards, as the city has grown. Thus railways are often faced with the necessity of spending exorbitant sums to purchase the necessary real estate, when it becomes necessary to expand yards that are situated within the city limits. In addition, other obstacles, such as grade crossings, smoke ordinances, and civic regulations of other kinds tend to hamper operations.

Several roads have solved this problem by locating new yards outside of metropolitan areas and hence usually many miles from the interchange points and freight stations. The distance varies, but in at least one instance the yard is situated nearly a hundred miles from the principal interchange points. At first glance, this seemed a rather awkward arrangement, but, actually, it has worked out most efficiently.

The road in question has, of course, a certain amount of yard space in the city to which transfer trains bring in cars from the various scattered interchange points, and switchers bring in the cars from the freight houses and the industries. The space at these yards is so limited that no attempt is made to classify the cars there but they are simply held until there are enough for a train and are then hauled to the distant classification point, where the trains are broken up and then assembled in proper order for road movement. Similarly on inbound traffic, the classification is made at the distant point and the cars are then hauled in to the various city yards in solid trains and distributed to the industries, the freight stations and the interchange tracks by transfer runs and switchers. Road crews operate between the various city yards and the distant classification yard on a turn-around basis, taking out the trains for classification, and returning with the inbound classified trains.

By this means, the road in question has avoided paying staggering sums for real estate to provide for the necessary expansion in the city and has also eliminated the petty annoyances which municipalities are inclined to impose upon railway operation. The land upon which the new yard was situated was purchased for a nominal sum, since it was far from the zone of high-priced real estate, and the operations through the terminal have not suffered in efficiency, but in fact have been improved.

Dramatizing Improvements Made in Railway Service

THERE is little object in a railway's spending time and money to improve its service if it does not let its customers, present or potential, know that such improvements are being made. The manufacturer of automobiles or radio sets who introduced some new and better feature into his product and then failed to tell the world about it would automatically convict himself of bad business judgment. The same is true of any railway which improves its product, transportation, without appropriately advertising the fact.

The railways have been and are making many improvements in the service they are rendering to passengers and shippers. Faster schedules are being put into effect, the most modern and comfortable cars and faster, more powerful locomotives are running on those schedules. In spite of this, there still exists too much of an impression in the mind of the general public that railway service today is just about the same as it alway has been. This condition is unfortunate and can and should be corrected.

The railways are competing not alone with each other; they are competing also with other forms of transportation and, quite as important, with other industries. More money is now being spent for recreation and amusement than ever before, and these competitors of the railways are striving earnestly and with good judgment to the end that a substantial part of this money will be spent with them. The railways cannot afford to let their own sales promotion efforts be eclipsed by those of their competitors for the public's money.

Something tangible is needed upon which to hang advertising and to bring into play that most effective of all selling aids, word-of-mouth advertising; and the railways have something tangible in the new equipment which they are buying. Within the last few days, the Chicago & North Western exhibited in its Chicago passenger terminal one of its gigantic new passenger locomotives. Contrast to the size of this locomotive was provided by the exhibition also of the "Pioneer", one of the earliest locomotive types. This exhibition was viewed by thousands who could not fail to take away a clear impression of the better service that the North Western is rendering. At other times, the North Western has put on similar exhibitions of new passenger train cars. By such dramatization of the improvements which it is making in its product, backed up by suitable advertising and publicity, this railway is doing an effective job of merchandising.

Many other roads, of course, are using the same or similar methods to attract attention of the public to their facilities and service. It is doubtful, however, whether the railways as a whole are doing all that they can in this direction. By dramatizing the improvements in their service, the railways should improve not only their own business individually, but also the sale of railway transportation in general.

"Commercializing" a Government Department

A SPIRITED controversy has been started in Great Britain by a series of articles which recently appeared in the Times (London). The author of the series is Lord Wollmer, who was assistant postmaster general in the recent Conservative government, and his thesis is the alleged shortcomings of the British post office as a business undertaking. The merits of the case, pro or con, need not concern us, but Lord Wollmer's concrete recommendation for a reorganization of the department is quite interesting. His proposal, briefly, is that the post office be re-organized following as closely as possible the model of a private corporation, that its affairs be directed by the application of accepted business principles and that the staff be divorced from civil service regulations. Lord Wollmer asserts that the profits of the post office are no proof of its efficiency, since it is a monopoly, and that wherever the department had had to compete with private enterprise "whether in parcels post, life insurance, or cables, etc., it has invariably been unsuccessful."

We need not attempt to form an opinion regarding a problem of internal policy in Great Britain, about which we cannot properly be concerned, to recognize in Lord Wollmer's exposition certain aspects which are related to railroading. The first and more obvious of these, of course, is that whatever faults may be found with government operation of post office facilities under the civil service plan could be found, and have been found, with government operation of railways under a similar plan.

Another aspect of the situation which relates it to railroad experience in North America is the fact that we have on this continent what is probably the world's first example of a government enterprise organized and conducted as nearly as possible like a private corporation. We refer to the Canadian National Railways.

The German railways, under the Dawes plan, have something of the same organization. And all over the world wherever the railways are operated by the government there has arisen a demand that they be "commercialized", i.e., that they be organized in a manner to secure as many of the advantages of private operation as is possible with government ownership. In Lord Wollmer's proposal, this idea, which as far as we know received its first extensive trial in Canada, is developed to include other government services. A decided compliment to the efficiency of private ownership and operation, as well as to the success of the Canadian National in its endeavor to retain as many as possible of the advantages associated with private corporate control in an enterprise owned by the government, seems implicit in Lord Wollmer's proposal.

Switcher Efficiency and Smoke Prevention

THE conventional type of steam locomotive used in switching, transfer and suburban service in big cities and industrial centers is admittedly objectionable to the public both from the point of view of smoke development and of noise. The interesting suggestion is now receiving some consideration that by the use of forced draft to the ash pan of a switching locomotive instead of induced draft from the front end, the amount of air needed for complete combustion can be accurately controlled under all load and coal conditions, thus practically eliminating objectionable smoke. At the same time, the exhaust tip is enlarged to an area at least equivalent to that of the smallest part of the exhaust passages, thus minimizing back pressure and the noise of exhaust pulsations.

It is maintained that the efficiency of the locomotive will be substantially increased by more complete combustion of the fuel, by the decreased back pressure under which the locomotive will operate and also by the elimination of the stack blower and steam actuated smoke consuming devices which are known to cause a heavy drain on the coal pile. The railroads have in the past experimented with forced draft applications in steam locomotive service, a recent installation on a Texas & Pacific 2-10-2 type locomotive being described in the 1928 Proceedings of the International Railway Fuel Association. This design was featured by a steam turbine-driven fan, supplying air to the ash pan, a 9-in. exhaust tip and a 39-in. stack. This locomotive was reported to operate practically without smoke with a gain of 400-cylinder hp., under full load, due to the substantial reduction of back pressure. A net increase in power of this magnitude doubtless could not be expected under the conditions incident to switcher operation but, from the point of view of smoke and noise prevention, as well as increases in efficiency in several particulars, the railroads would apparently be justified in making further test installations of mechanical forced draft as applied particularly to switching locomotives.

Are 37 Sizes Necessary?

BECAUSE wood is a product of nature rather than manufacture, man has no control over its physical structure. Unlike the user of metal, the user of wood cannot set up specifications for quality to serve as a guide for manufacturing processes, but is confined to a statement of desired quality whereby the material which will meet his purpose may be separated from the available supply of all woods as they are produced in the forests. Because wood structure varies with species, with climate and with other conditions incident to its growth, there has been a decided lack of agreement as to the rules for the establishment of quality. Consequently, those who have undertaken to promote standardization or simplification of wood purchasing practices have been confronted with such a diversity of conditions that efforts to meet the needs of conflicting interests have given rise to a rather complex set of rules and specifications. But in spite of the sincere desire to satisfy these diversified requirements and demands it is evident that the effort to establish standard specifications is meeting with definite opposition. It is clear, therefore, that it will be some time before standard practices will be generally accepted.

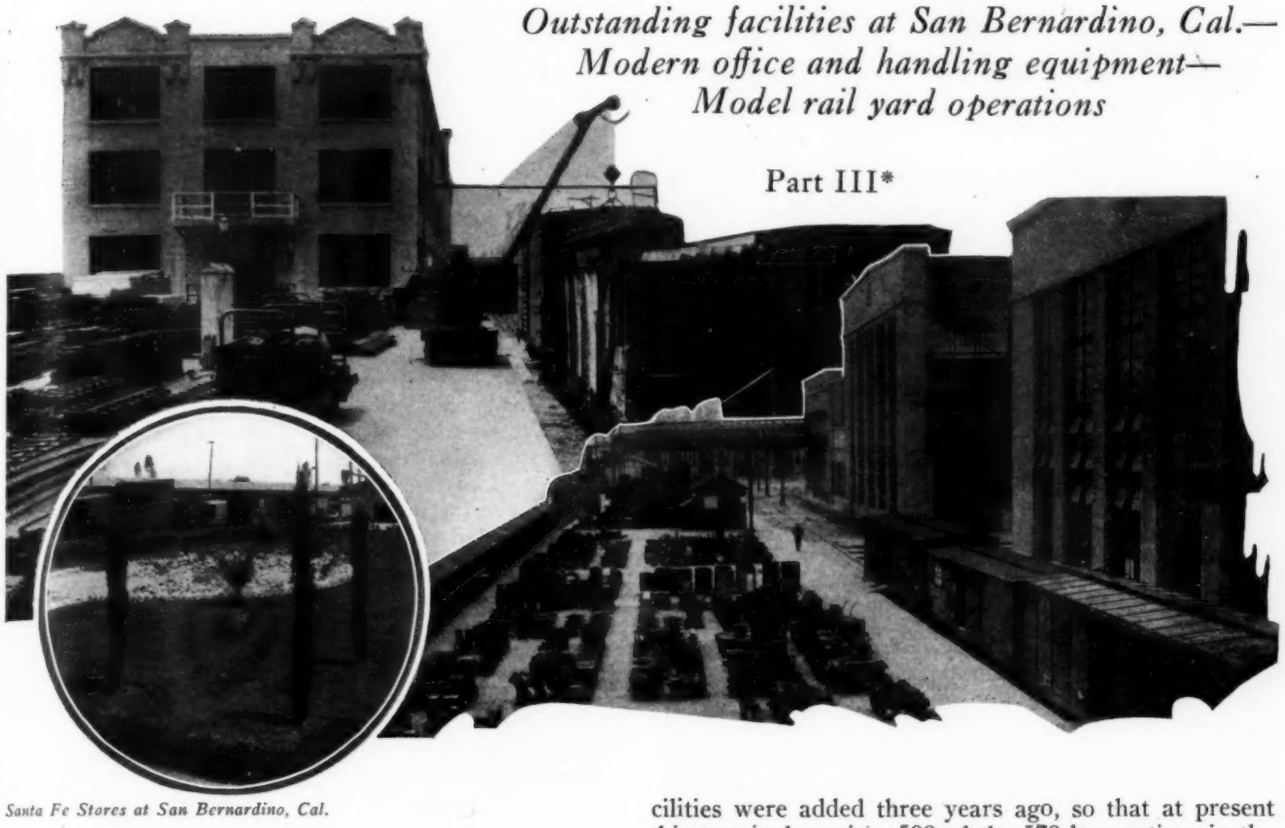
In the meantime, however, there is opportunity for simplification in another direction, namely in the variety of sizes demanded by the user. Last spring the Committee on Wooden Bridges and Trestles of the American Railway Engineering Association presented a report on the feasibility of establishing joint central supply yards for the handling of standard trestle timber, for tributary groups of railways, but reported adversely to this suggestion for the reason that there were too many sizes of timbers to be provided, namely, 13 sizes of caps, 37 sizes of stringers, 15 sizes of ties and 9 sizes of guard rails. While the committee was undoubtedly justified in its conclusion, it accepted without comment the condition upon which the conclusion was based.

Are 37 sizes of stringers necessary? The automobile manufacturers have given an excellent object lesson in what can be accomplished through voluntary effort towards simplification of practices. But even the wooden trestle is built to last many more years than an automobile and, unlike the motor vehicle manufacturer, the railroad derives no benefit merely by rendering an old structure obsolete. A change in the width, depth or length of a stringer introduces many complications and for a time at least would require the carrying of a greater number of sizes. Clearly the problem is not a simple one. But has there been any serious effort to solve it? Until one is made, it cannot be declared impossible.

Santa Fe Storehouses

Outstanding facilities at San Bernardino, Cal.—Modern office and handling equipment—Model rail yard operations

Part III*



Santa Fe Stores at San Bernardino, Cal.

THE Atchison, Topeka & Santa Fe stores at San Bernardino, Cal., 60 miles east of Los Angeles, maintained to supply the Coast lines of this road with material, are the finest on the Pacific coast from the standpoints of size, appearance, permanence and equipment, and rank among the finest in the country.

The Coast lines of the Santa Fe comprise 2,600 miles of lines, mostly in California. In 1908, 100 acres of unbroken ground close to the passenger station, but completely removed from the depressing surroundings that are typical of railway shop locations, was converted into a carefully planned locomotive and car repair terminal. Consistent with the original plan, extensive facilities were added three years ago, so that at present this terminal services 500 of the 570 locomotives in the territory and performs the heavy repairs for all of the locomotives. This work is done at the rate of 14 heavy and 36 light repairs, or an average of 50 engines a month. In addition, last year's car work comprised Class 1 repairs to 830 cars, Class 2 repairs to 590 cars, Class 3 repairs to 2,104 cars, Class 4 repairs to 1,302 cars, Class 5 repairs to 21,633 cars, or a total of 21,449 cars repaired a year.

Half Million Dollar Business Monthly

The material for this work and the bulk of all miscellaneous supplies for stations and roadway use and also for replenishing the stocks at the smaller Coast line stores are controlled and distributed from this point, including all oil and lubricants; it is also the center for handling scrap iron and for storing and reconditioning

* The third of a series of articles on Santa Fe stores, the first and second articles having been published November 2 and November 9.

In the Maintenance of Way Yard

Handling Facilities at San Bernardino—Overhead and Ground Cranes and Tractors

rail. The stock of unapplied material at San Bernardino averages around $1,500,000, including $145,000 of lumber, and the disbursements of miscellaneous materials amount to $405,000 a month, or about $5,000,000 a year. About 250 people are employed there in the supply work.

The supply facilities occupy about 40 acres of land and include a main store and separate warehouses for steel, signal and track materials, brick, bar iron and grease, oil, etc. The buildings are either concrete or steel and, in harmony with the country where orange orchards predominate and the air is clean and bright, they have been planned and finished to secure a pleasing appearance as well as economy in operation. The improvement work of the last three years alone represents, without counting land and handling machinery, an investment around $400,000, divided as shown in the above table.

Storehouse addition	$150,000
Steel storage	50,000
Signal and track material storage	55,000
Other storage	52,000
Rail yard facilities	90,000
Brick storage	9,000
Garage	14,000
Other buildings	15,000
Total	$435,000

Storehouse 575 ft. Long

The main storehouse is a reinforced concrete building, 50 ft. wide and 575 ft. long, with 275 ft. of the building comprising a new three-story addition. The first floor is subdivided to provide a section 157 ft. for material, another 40 ft. long for a general foreman's office and lavatories, and a 78 ft. length for the office of the superintendent of shop and his current file room. On the second floor a 115 ft. section is allotted for material and 160 ft. for the office of the district storekeeper for current files and lavatories, while on the third floor is a 175 ft. section for material and a 100-ft. section for permanent files. These floors are connected by an automatic freight elevator.

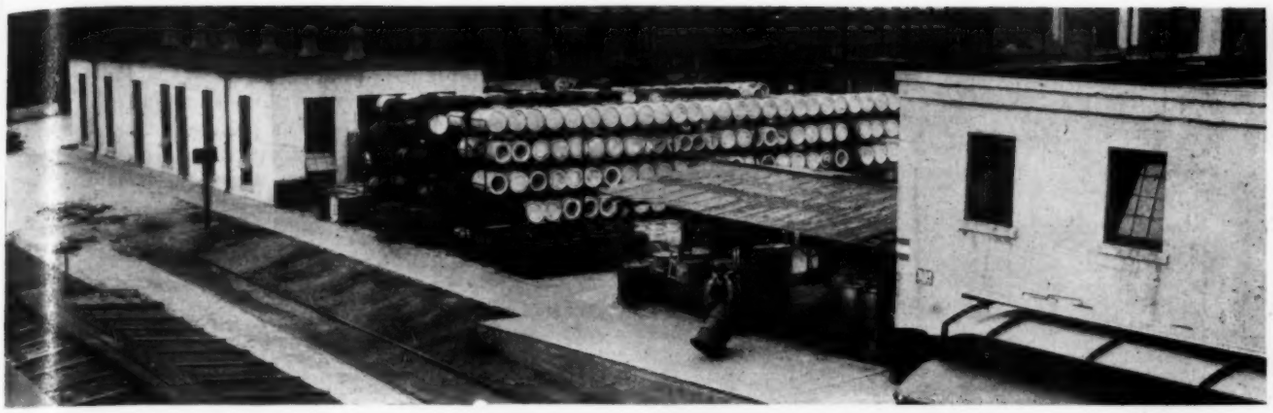
The roof of the old section, which is 300 ft. long, is 18 ft. above the floor, and is of a monitor construction while the head room of all floors in the new section is 10 ft. or more. All floors are of concrete and all window sash is steel. In the old section and in the top floor of the new section, the sash is in panels 11 ft. above the floor line, to afford unobstructed wall space for material, pivoted panels being provided for ventilation, while full sash is installed in the other portions of the building. Outside, the pilasters protrude a few inches to break the flat surface, the roof line is ornamental and the surface is covered with a cement wash, while much of the interior of the storehouse is painted, using grey on the lower half and white above.

Over 7,000 ft. of Steel Shelving

All shelving in the new addition is of the adjustable steel type. This shelving is not only installed in the storehouse, where it is 7 ft. 4 in. high, but is also used in the file rooms. It is estimated that the new storehouse contains approximately 7,000 line ft. of shelving.

The file room for all current documents and correspondence of the store is also equipped with metal filing

In the Store Room at San Bernardino



The Oil and Paint Storage

cabinets. With the green colored steel shelving filled with straight rows of brown backed cases of a uniform standard, and with the new metal filing cabinets and the space and lighting provided, this is one of the finest and most serviceable file rooms in railway storekeeping.

Install Office Appliances

The offices are also distinctive for their appointments. They include private quarters for the chief clerk, who can see the office force and yet talk without disturbing them, by reason of a clear-glass partition. In the outer office, the clerical force is on one side of the room and the accounting force on the other, while a wall of glass extending entirely to the floor line forms a separate room in which the typists work. Special board is applied to the ceiling to deaden sound. The outer office is fitted with desks with "lino" tops, with a drinking fountain, and has indirect lighting. Nine comptometers, 1 electric adding machine and 15 typewriters are at work constantly in these offices.

A 1,500 ft. Concrete Platform

A concrete platform 60 ft. wide and 300 ft. long is built on the east end of the building. This platform is built car-floor high and extends in the direction of the car repair yard and is, therefore, used for car material. It also connects with a subway by which employees can conveniently and safely reach the business and residential section of the city across the yard tracks. At the opposite end of the storehouse is another platform car-floor high, 60 ft. wide and 300 ft. long, while beyond this, the ground is paved with concrete for a distance of 400 ft. These platforms are situated at the end of the boiler and machine shops and hence are used for locomotive materials. Counting a 10-ft. strip at the side of the store building and the ground slab, there is a total of 1,575 lin. ft. of concrete paving and platforms abutting on the main storehouse. Along one side of the platforms are two standard-gage tracks and the concrete is kept clear for a distance of 10 ft. on that side to permit the free operation of trucks, while two 15-ton crane ways extend from the machine shop across the storehouse tracks and over the ground platform for loading and unloading locomotive tires, wheel centers, axles, cylinders and other heavy material from cars and for moving them to the shops.

The oil house is located on the opposite side of the storehouse tracks and consists of a reinforced concrete building, 50 ft. wide and 100 ft. long, with a basement served by an elevator. There is an unloading platform 10 ft. wide and car-floor high along one side and a low concrete platform 50 ft. wide and 75 ft. long at one end equipped with iron racks for empty barrels and other oil handling equipment. All of the oil used in the shops and on the Coast lines is handled through this plant, the oil for distant points being distributed chiefly by supply trains.

Ideal Steel Storage

The large stocks of sheet steel, angle irons and flues carried at San Bernardino are protected from exposure and arranged for the greatest ease of handling by both stores and shop forces, in a building of structural steel 100 ft. wide and 200 ft. long. This building is located within 100 ft. of the boiler shop and flue shop and is well lighted by steel sash which occupies most of the wall space. A standard-gage track runs from the boiler shop through the center of this building. On one side of this track rails are set 12 in. apart in concrete for storing sheet steel on edge, while steel angles, channels and superheater units are stored on the other side. Concrete paving facilitates the movement of trucks in this building and a 15-ton overhead traveling crane is installed to handle the material from cars to trucks or storage. The remainder of the building is divided into

A View of the Rail Yard

Car Material Stocks

pockets by steel rails set in concrete for the storage of flues. The building is open on the side next to a track serving the flue shop so that flues can be loaded or unloaded directly from the cars without more than one handling. Concrete paving is also built along this side of the building.

A building 24 ft. wide and 300 ft. long, with one side open, is maintained for bar iron and steel and pipe. This building is of wood, but compares with the others in the attention given to handling supplies. It is adjacent to the blacksmith shop where most of the material is used and has a track running the full length of the building on the open side so that cars can be loaded or unloaded directly. Six-foot lengths of rail are set in concrete 24 in. and 36 in. apart throughout the building with a cross rail 40 in. above the floor, forming two tiers of racks, and a concrete pavement is laid between the building and the tracks for the movement of trucks.

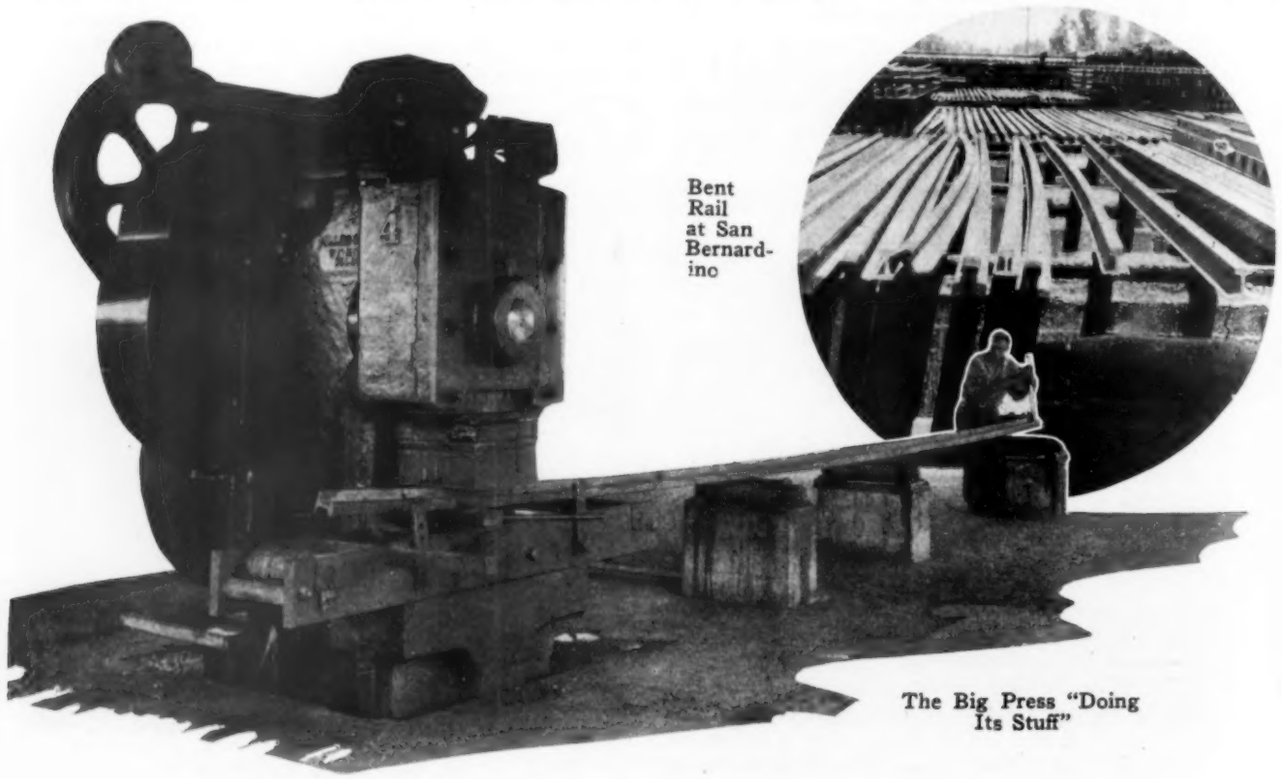
The lumber yard at San Bernardino is about three-fourths of a mile from the mill and car repair yards. Here the lumber is orderly arranged in piles on permanent foundations, protected by a high woven wire fence, while three concrete runways run through the lumber yard with concrete laterals on which the tractors and trailers are operated to take the lumber from the cars to the piles and from the piles (after seasoning) to the lumber mill. A steel shed with metal racks is maintained near the mill, for the dimension stock as it comes from the mill.

Twenty Acres for Track Material

To avoid undue crowding of the supply work when the shops were extended, 20 acres of ground were required near the train yard, about one mile from the shops, and converted into a facility for the storage of roadway materials. There are eight pairs of tracks in this yard, spaced 90 ft. apart and 1,200 ft. long. Along the first track, a steel warehouse 40 ft. wide and 260 ft. long, with a concrete platform 40 ft. wide and 138 ft. long, was built for signal materials; also two other steel buildings, 30 ft. wide and 200 ft. long, and 30 ft. wide and 150 ft. long, respectively, for miscellaneous roadway materials.

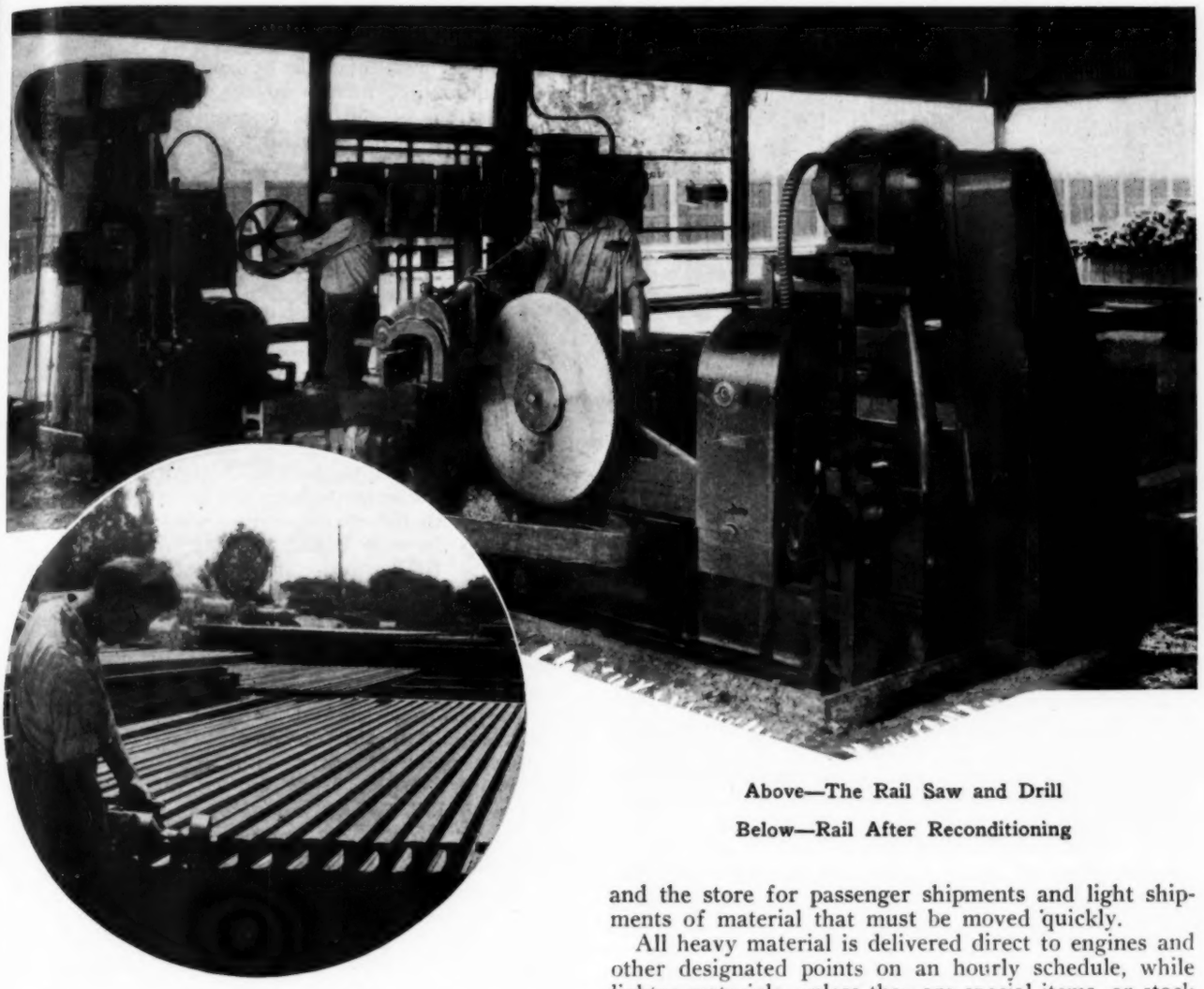
Between the second and third pairs of tracks is a concrete platform 30 ft. wide, 300 ft. long and car-door high, for the storage of all kinds of track materials. A steel building, 30 ft. wide and 40 ft. long, on the end of this platform is maintained for track tools. The scrap is also handled between these tracks, the facilities consisting of a dock 78 ft. wide and 232 ft long, also two steel buildings, 30 ft. wide and 72 ft. long, for reclaiming work and for the storing of scrap brass.

No buildings occupy the land between the fourth and fifth pairs of tracks, so this area is used for storing bulky and irregular shaped materials, such as hand cars, boilers, tanks, concrete pipe and similar materials and



Bent Rail at San Bernardino

The Big Press "Doing Its Stuff"



Above—The Rail Saw and Drill

Below—Rail After Reconditioning

articles which can be handled by crane, while the space beyond the fifth pair of tracks forms the rail yard.

The roadway is largely surfaced with rock screenings and, like the locomotive and car shop district, is laid with concrete roads at least 10 ft. wide where trucks operate. Portions of the yard are wired with electric lights on high standards for night work and the offices in these yards are connected by telephone with the main store and other points in the terminal.

Power Machines Cut Hand Work

To simplify all handling operations and facilitate the delivery of materials from stocks to users, the store not only has the 15-ton traveling crane over the locomotive material, but also has two locomotive cranes of 15 and 20-tons capacity, equipped with 40 ft. and 50-ft. booms and electric magnets, two 1½ ton electric cranes with 15-ft. booms, one electric and one gasoline tractor, three electric warehouse trucks and two 1½-ton and 2-ton automobile trucks with a complement of 175 general-service trailers and 10 lumber buggies. A steel and concrete garage and charging plant with a concrete floor has been built for this equipment.

The warehouse trailers are operated chiefly on the 1,500-ft. storehouse platform. The electric trucks are used for general delivery service, the gasoline tractor for lumber yard work where it has eliminated switching. The auto truck is used between the freight house and the store for passenger shipments and light shipments of material that must be moved quickly.

All heavy material is delivered direct to engines and other designated points on an hourly schedule, while lighter materials, unless they are special items, or stock which must be kept under close supervision, are delivered to small supply rooms maintained in the machine shop, boiler shop and roundhouse, where the workmen may draw them on requisitions as required. The same method applies to the car repair yard. Such

Under the Crane in the Iron House

A Corner of the Records Room

materials as bolts, nuts, washers, screws, etc., can be supplied more effectively by this procedure.

Rail Yard Operations

The rail yard was built and operated chiefly to prepare scrap rail for the market, but it is also used to condition rails for relaying. The need for a yard like that operated in San Bernardino becomes evident from a consideration of the disposition of rail after it comes out of main-line track. If the rail is straight and not damaged, and of proper weight, it is used again as No. 1 or No. 2 relayer rail in main tracks where the traffic is light, or in secondary tracks. If it is bent or damaged, it must be discarded, unless it can be reconditioned by cutting off the bad ends and straightening. The prices obtainable on the market for discarded rail, moreover, depend upon the condition of the rail sold, as well as its weight. All curved and bent rail, for example, as well as rail with split heads or worn flanges, can only be sold as No. 3 scrap, while much of the No. 3 scrap can be sold as No. 2 or No. 1 scrap at much higher prices by cropping the bad ends and straightening.

The rail facility at San Bernardino is one of the most modern of its kind in both arrangement and machinery. The central space in the yard is occupied by a steel building containing a large rail straightener, a rail saw and a rail drill, while each way from this building extend permanent rail racks, consisting of concrete sills, 36 in. high, built crosswise of the tracks at intervals of 12 ft. A rail is mounted on each sill to take up the wear. These racks provide a yard 784 ft. long, one-half forming an incoming yard for rail to be straightened, and the other a storage yard for rail after it has been straightened. All unloading is done by locomotive cranes equipped with 40 to 50-ft. booms, which operate on one of the two tracks on each side of the rail yard. A continuous line of steel rollers on concrete blocks is also installed along one side of the yard to move single lengths of rail to the mills, where such handling is desired. The machines are all heavy-duty types, operated by electricity and selected to perform a high quality of work, and they are arranged to avoid lost motion in the movement of the rail which first goes through the straighteners, then through the saw and then to the drill which drills the holes in both ends at one setting.

The cost of unloading, sorting and loading rail in this yard, based on the figures for the first quarter of 1929, is 79 cents a gross ton, while the cost of straightening, including all contingent expenses, is $1.14 a gross ton, giving a total cost of handling of $1.93. During the first three months of the year, an average of 768 gross tons of rail was received from the line per month, consisting of 413 gross tons of No. 3 scrap rail, 258 gross tons of No. 1 scrap rail, and 97 gross tons of No. 2 re-layer rail, and this was converted into 396 gross tons of No. 1 relayer rail a month, 295 gross tons of No. 2 relayer rail and 77 gross tons of No. 1 scrap.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended November 2, reflecting the usual seasonal decline, amounted to 1,071,650 cars, a decrease of 62,160 cars as compared with the preceding week. As compared with the corresponding week of last year it was also a decrease of 32,292 cars, although as compared with 1927 it was an increase of 32,575 cars. All districts except the Pocahontas, Central Western and Southwestern districts reported reductions as compared with the corresponding week of last year, while all except the Southern and Northwestern showed increases as compared with 1927. Loading of merchandise and coke showed increases as compared with both years but all other commodity classifications showed decreases as compared with last year. Miscellaneous freight, coal and ore showed increases as compared with 1927. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

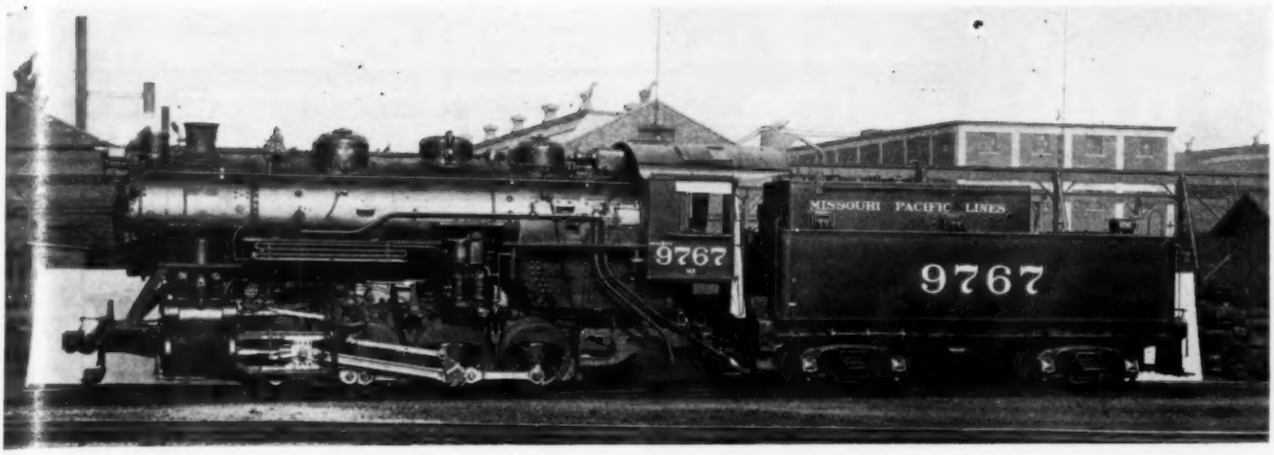
Week Ended Saturday, November 2, 1929

Districts	1929	1928	1927
Eastern	238,687	246,511	228,572
Allegheny	217,910	223,538	202,444
Pocahontas	63,717	63,436	52,283
Southern	148,734	160,260	156,938
Northwestern	147,552	159,047	148,815
Central Western	165,905	163,574	163,069
Southwestern	89,145	87,576	86,954
Total Western Districts	402,602	410,197	398,838
Total All Roads	1,071,650	1,103,942	1,039,075
Commodities			
Grain and Grain Products	38,336	52,638	48,207
Live Stock	33,883	33,959	35,079
Coal	192,408	196,354	166,329
Coke	11,948	10,856	8,809
Forest Products	59,771	66,186	66,159
Ore	45,811	48,246	34,244
Merchandise L.C.L.	271,191	267,762	270,028
Miscellaneous	418,302	427,941	410,220
November 2	1,071,650	1,103,942	1,039,075
October 26	1,133,810	1,162,974	1,112,816
October 19	1,185,510	1,163,135	1,129,055
October 12	1,179,008	1,190,741	1,120,007
October 5	1,179,047	1,187,032	1,102,994
Cumulative totals, 44 weeks	45,628,611	44,032,586	44,676,701

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended November 2 totaled 73,129 cars, a decrease from the previous week of 4,793 cars and a decrease from the same week last year of 22,077 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
November 2, 1929	73,129	39,151
October 26, 1929	77,922	40,377
October 19, 1929	82,627	41,337
November 3, 1928	95,206	41,955
Cumulative Totals for Canada		
November 2, 1929	3,051,120	1,808,270
November 3, 1928	3,096,221	1,737,380
November 5, 1927	2,836,712	1,654,987



Oil-Burning Eight-Wheel Switcher Built for the Missouri Pacific by the Lima Locomotive Works, Inc.

Eight-Wheel Switchers for the Missouri Pacific

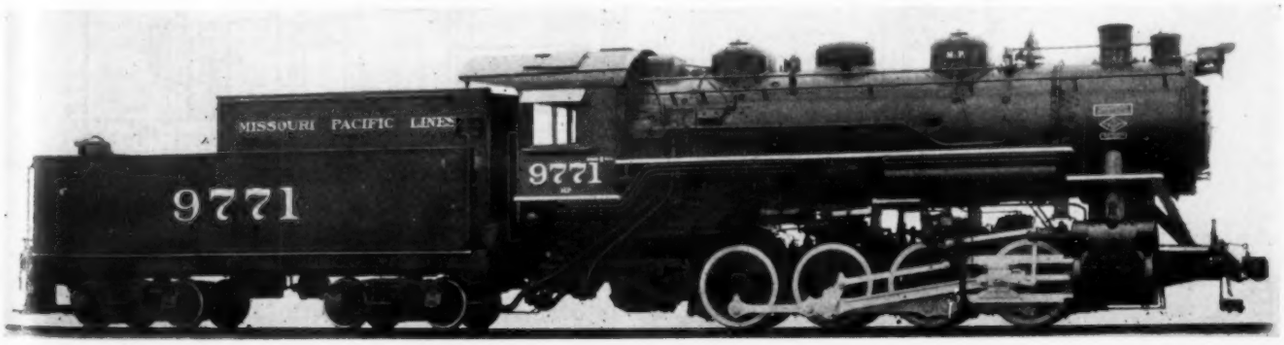
To handle 85-car trains in transfer service—Ten burn oil and 15 are fired with soft coal

THE Lima Locomotive Works, Inc., recently delivered 25 eight-wheel switchers to the Missouri Pacific, 10 of which are equipped to burn oil and 15 to burn soft coal. While the general design of these locomotives is along the lines of the design of standard U. S. R. A. eight-wheel switchers, the severity of service for which they were purchased makes this order of considerable interest. Each of the new locomotives develops a maximum tractive force of 57,750 lb., with a boiler pressure of 198 lb., 51-in. driving wheels and cylinders having a diameter of 25 in. and a stroke of 28 in. The weight carried on the drivers is 232,000 lb. for the coal-burning locomotive, and 221,000 lb. for the oil-burning. This gives a factor of adhesion of 4.02 for the former and 3.83 for the latter.

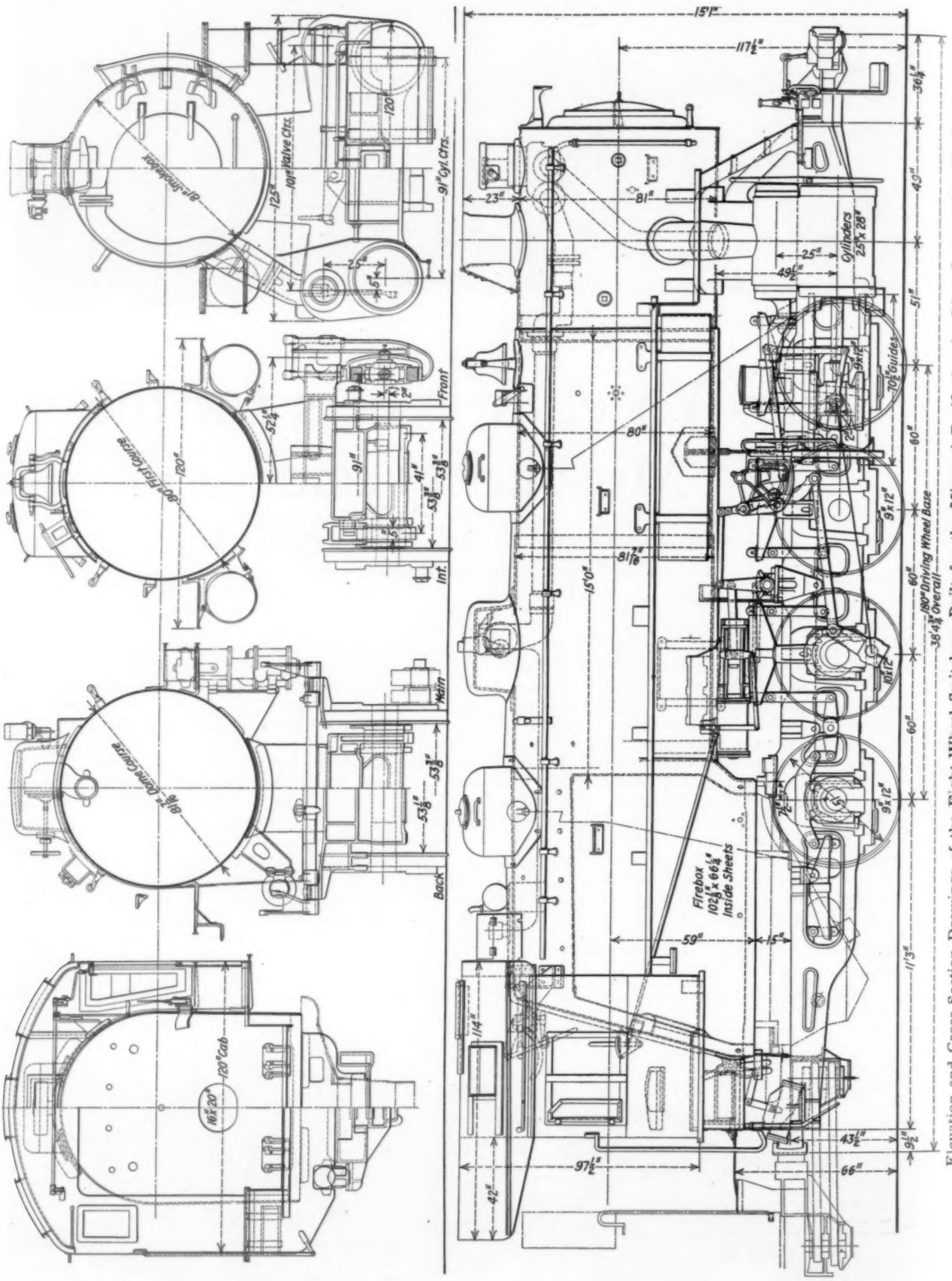
Designed for Variety of Terminal Services

A number of these locomotives are being placed in service in large terminals where transfer service is required between yards, and between yards and connecting lines as at St. Louis, Mo., and Kansas City. The distance which these locomotives are required to haul trains varies from 6 to 12 miles. The average length of train handled in this service is 85 cars. Some of these eight-wheel switchers are to be used for loading and unloading car ferries, operated at river crossings. The new locomotives will also enable the railroad to return a number of road engines, which are not adapted for yard service, to road service.

The tractive force of the new eight-wheel switchers permits the handling of large trains that were formerly handled by the converted road engines. The tenders have a capacity of 3,000 gal. of fuel oil and 8,000 gal. of water, and 10 tons of coal and 9,000 gal. of water respectively. This provides sufficient fuel capacity for each locomotive to work from 22 to 24 hours without refueling, and water capacity to keep each locomotive in service for at least one eight-hour shift.



Right Side of the Missouri Pacific Coal-Burning 0-8-0 Type Locomotives



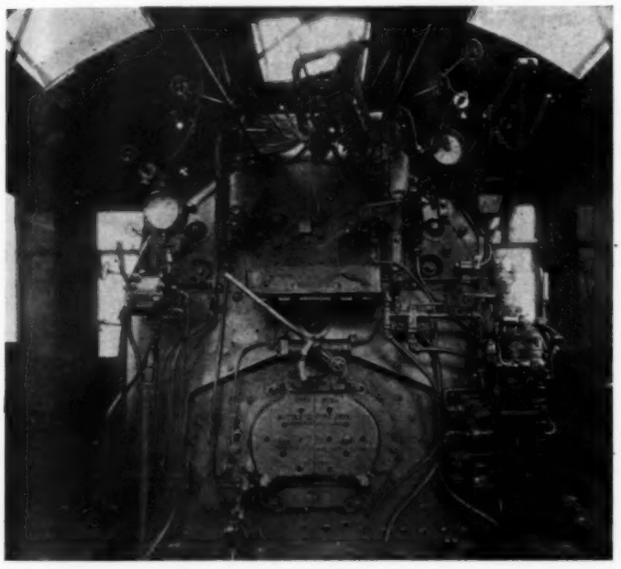
Elevation and Cross-Section Drawings of the Eight-Wheel Switchers Built for the Missouri Pacific by the Lima Locomotive Works

These locomotives are also designed to facilitate lead switching, and the classification of trains in flat yards.

The relatively high tractive force together with the fuel and water capacity of the tender, is considered by the railroad to make these locomotives especially adapted for quick switching, as well as for heavy transfer service. These features permit obtaining a large percentage of potential working hours as compared with locomotives designed for road service or switch engines developing low tractive force, which are impossible to adapt to various kinds of service.

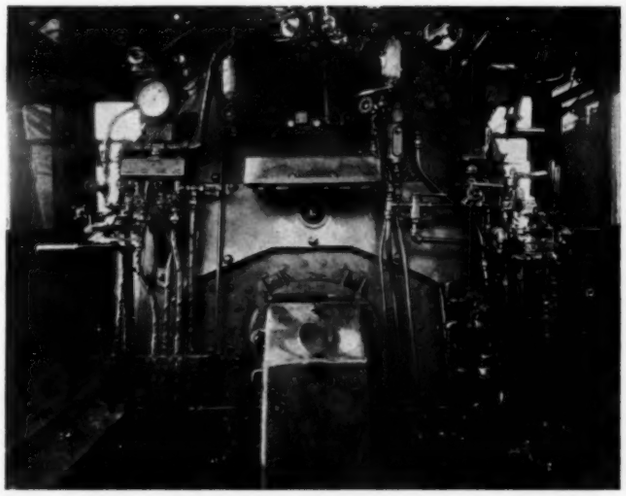
Table of Dimensions, Weights and Proportions of the Missouri Pacific Eight-Wheel Switchers

Railroad	Missouri Pacific	
Builder	Lima Locomotive Works, Inc.	
Service	Switching	
No. ordered	15 coal	10 oil burning
Cylinders, diameter and stroke	25 in. by 28 in.	
Valve gear, type	Baker	
Valves, piston type, size	10 in.	
Maximum travel	6¼ in.	
Outside lap	1 in.	
Exhaust clearance	Line and line	
Lead in full gear	⅛ in.	
Weights in working order:		
On drivers	232,000 lb.	221,000 lb.
Tender	161,300 lb.	159,800 lb.
Total engine and tender	393,300 lb.	380,800 lb.
Wheel bases:		
Driving	15 ft.	
Total engine and tender	53 ft. 4 in.	
Driving wheels, diameter outside tires	51 in.	
Journals, diameter and length:		
Driving, main	10 in. by 12 in.	
Driving, others	9 in. by 12 in.	



Interior of the Cab of the Coal Burning Locomotives

Boiler:		
Type	Straight top	
Steam pressure	198 lb.	
Fuel, kind	Soft coal	Oil
Diameter, first ring, inside	80 in.	
Firebox, length and width	102¼ in. by 66¼ in.	
Tubes, number and diameter	203—2 in.	
Flues, number and diameter	36—5½ in.	
Length over tube sheets	15 ft.	
Grate area	47 sq. ft.	
Heating surfaces:		
Firebox	190 sq. ft.	
Syphons and arch tubes	69 sq. ft.	57 sq. ft.
Tubes and flues	2,355 sq. ft.	
Total evaporative	2,614 sq. ft.	2,602 sq. ft.
Superheating	608 sq. ft.	
Combined evaporative and superheating	3,222 sq. ft.	3,210 sq. ft.
Tender:		
Water capacity	9,000 gal.	8,000 gal.
Fuel capacity	10 tons	3,000 gal.
Rated tractive force	57,750 lb.	
Weight proportions:		
Weight on drivers ÷ tractive force	4.02	3.83
Total weight engine ÷ comb. heating surface	72.0	68.8
Boiler proportions:		
Tractive force ÷ comb. heating surface	17.9	18
Tractive force × diam. drivers ÷ comb. heating surface	913	917.5
Firebox heating surface ÷ grate area	4.04	
Firebox heating surface, per cent of evap. heating surface	7.26	7.28



Interior of the Cab of the Oil-Burning Locomotives

The principal dimensions, weights and proportions of both the oil-burning and coal-burning locomotives are given in the table. Increasing the pressure from 175 lb., which is used on the U. S. R. A. locomotive, to 198 lb. involved several minor changes in the design of the machinery parts. The total evaporative heating surface is somewhat greater than the 2,569 sq. ft. used on the U. S. R. A. eight-wheel lomocotive, although the Missouri Pacific locomotives have 27 less 2-in. tubes than their predecessors but the same number of superheater flues. The weight on the drivers of the new power is considerably greater than the U. S. R. A. eight-wheel switcher, which gives the new design a more favorable factor of adhesion.

The new locomotives are equipped with Thermic syphons, type A superheaters, Chambers front-end throttles, and Alco type G power reverse gears. The coal-burning locomotives have Franklin grate shakers. Commonwealth castings are used for the ash and oil pans, front bumpers, cylinders, bed castings, and tender frames.

NEW YORK UNIVERSITY announces that, in its course in accident prevention, ten free scholarships are to be conferred. This course, which is given at the Washington Square branch of the University, aims to educate men for executive positions in the safety movement. The scholarships are made available by Arthur Williams, president of the Museum of Safety.

* * *

The C. N. R.'s "Continental Limited" at Biggar, Sask.

Hudson Bay Railway

Project is designed to provide a shorter route from the Canadian wheat fields to European markets

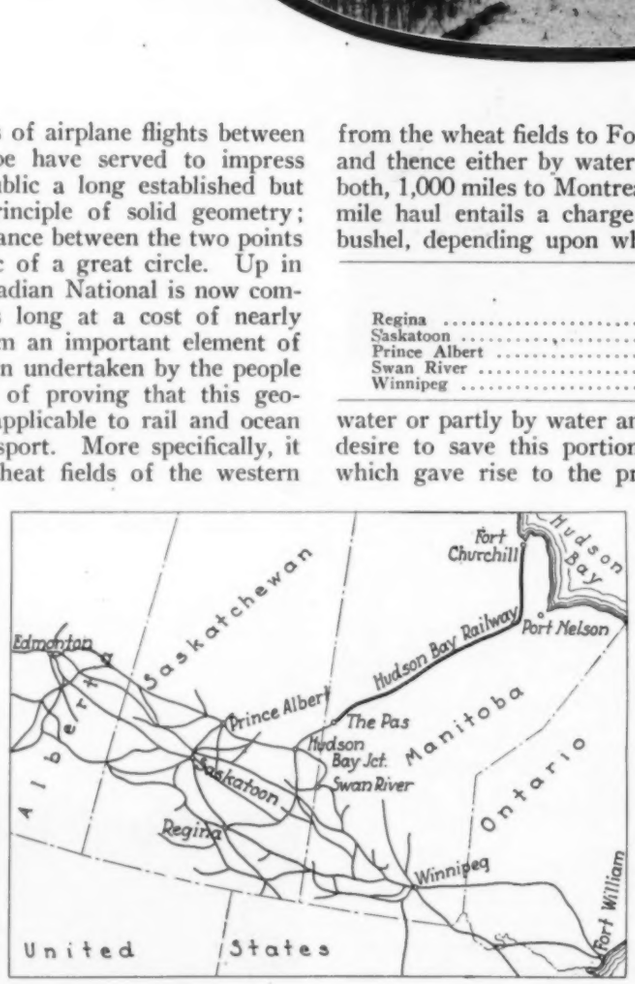
A Location Party Equipped for Subzero Work (above)

Typical Roadway Construction Between Amery and Fort Churchill (right)

NEWSPAPER reports of airplane flights between America and Europe have served to impress upon the general public a long established but not generally understood principle of solid geometry; namely, that the shortest distance between the two points on a sphere is along the arc of a great circle. Up in Northern Manitoba, the Canadian National is now completing a railroad 510 miles long at a cost of nearly $30,000,000, which is to form an important element of an experiment which has been undertaken by the people of Canada for the purpose of proving that this geographic principle is equally applicable to rail and ocean transport as it is to air transport. More specifically, it is an effort to bring the wheat fields of the western provinces closer to the markets of Europe.

Fort Churchill on the west coast of Hudson bay, Lat. 59, Long. 94; Montreal, Lat. 45½, Long. 73½; and New York, Lat. 40¾, Long. 74, are all about the same distance from Liverpool. It is because of its favorable longitude and in spite of its unfavorable latitude that Fort Churchill has been selected as a new port for the export of wheat from the western prairies. At present, grain to be exported via either Montreal or New York, must first move by rail from the wheat fields to Fort William on Lake Superior, and thence either by water or rail, or a combination of both, 1,000 miles to Montreal or New York. This 1,000-mile haul entails a charge of 9 cents to 10 cents per bushel, depending upon whether it is made entirely by water or partly by water and partly by rail, and it is the desire to save this portion of the transportation cost, which gave rise to the project of building a railway which would provide a direct connection between the prairie provinces and a port on Hudson bay. The advantage of such a route, in so far as rail distance is concerned, is indicated by the above table of mileages.

	Fort William (Shortest route)	Fort Churchill
Regina	790	845
Saskatoon	904	815
Prince Albert	956	760
Swan River	712	700
Winnipeg	434	978



The Hudson Bay Railway in Its Relation to the Prairie Lines of the Canadian National

From this, it is evident that the average haul to Fort Churchill is not greater than to Fort William. But what is even more important is that when wheat arrives at Fort Churchill, it is nearly as close to Liverpool as it is at either Montreal or New York. Thus, this proposed route substan-

Soon To Be Completed

Fort Churchill, Hudson Bay Company Post on the Left; Mission on the Right

tially wipes out the haul from Fort William to the two Atlantic ports. There is, however, another side to the story.

There Are Certain Disadvantages

A ship sailing from a point on Hudson bay to Liverpool traverses arctic waters for fully half of the distance between the two ports. It must pass through Hudson strait at Lat. 62, which is closed by ice for a large part of the year. For, although this strait has been traversed for two centuries with a singular freedom from marine losses, the important question as to the duration of the period of safe navigation each year is by no means definitely settled. Opinions as to the length of the navigation season range from 12 to 22 weeks, with the date of its opening placed between July 1 and August 1, and the date of its closing between September 1 and November 15. Assuming that navigation would be open to October 25, the port of Fort Churchill would be available for the export of wheat for about 40 days after the Canadian season's crop movement begins. However, it is contended by some, that the earlier days of open water each summer could be utilized for handling the large surplus that is normally held over from the preceding season.

Aside from the matter of the length of the season for the crop movement via Hudson bay, there are pertinent questions as to insurance rates, the extent to which steamers will be attracted to this route, and the cost of operating the terminal facilities on the bay as compared with ports enjoying more favorable climates. It suffices to say, however, that the people of Canada have had ample opportunity to pass judgment on these questions because the project for the development of the Hudson Bay route was proposed as long ago as 1896, and was actively undertaken with the beginning of the construction of the Hudson Bay Railway in 1911.

A Survey Camp in the Stunted Timber on the Fort Churchill Extension

While work on this line was continued until 1918, by which time a large part of the line had been completed, operations were entirely suspended north of Mile 214, with a very limited service to that point, for almost 10 years before a decision was reached to resume the work and carry it to a completion. This decision was influenced by a new factor, the discovery of mineral resources of untold value in territory tributary to the line and the active prosecution of zinc, copper, silver and gold mining, to an extent giving rise to a demand for railway transportation. The rehabilitation and extension of the Hudson Bay Railway had been barely begun when steps were taken to provide a branch line from a point near its southern terminus to the Flin Flon and Sherritt-Gordon properties, this work being carried on concurrently with that on the main line.

Connecting Lines Being Built

The Hudson Bay Railway extends from The Pas to Fort Churchill, a distance of 510 miles. The Pas is at the end of a branch of the Canadian National, extending for 88 miles northerly from Hudson Bay Junction on the main line from Winnipeg to Prince Albert. The Canadian National is now carrying out a project for the construction of connecting lines in its great network of east and west routes through Manitoba, Saskatchewan, and Alberta, which will serve to provide direct access to the southern terminus of the Hudson Bay Railway, and it may be said that, by the time the line to Fort Churchill is ready for operation, there will be no point in the wheat growing region, served by the Canadian National, that will not be afforded a direct route to the Hudson Bay Railway.

To understand the reason for the location occupied by the line as it is now being built, it is necessary to know something of the history of the project. Fort Churchill was the site originally chosen for the port on Hudson bay, and a line 478 miles long was located at one time with that point as the objective. However, in 1912 after

construction had been started, it was decided to build into Port Nelson instead, because Port Nelson, at the mouth of the Nelson river, is farther south than Fort Churchill. This change in the plan served to shorten the line to 424 miles, and as no work had been done on the line beyond the point where the route to Port Nelson diverged from the located line to Fort Churchill, about 100 miles north of The Pas, this change pointed to a material reduction in the cost.

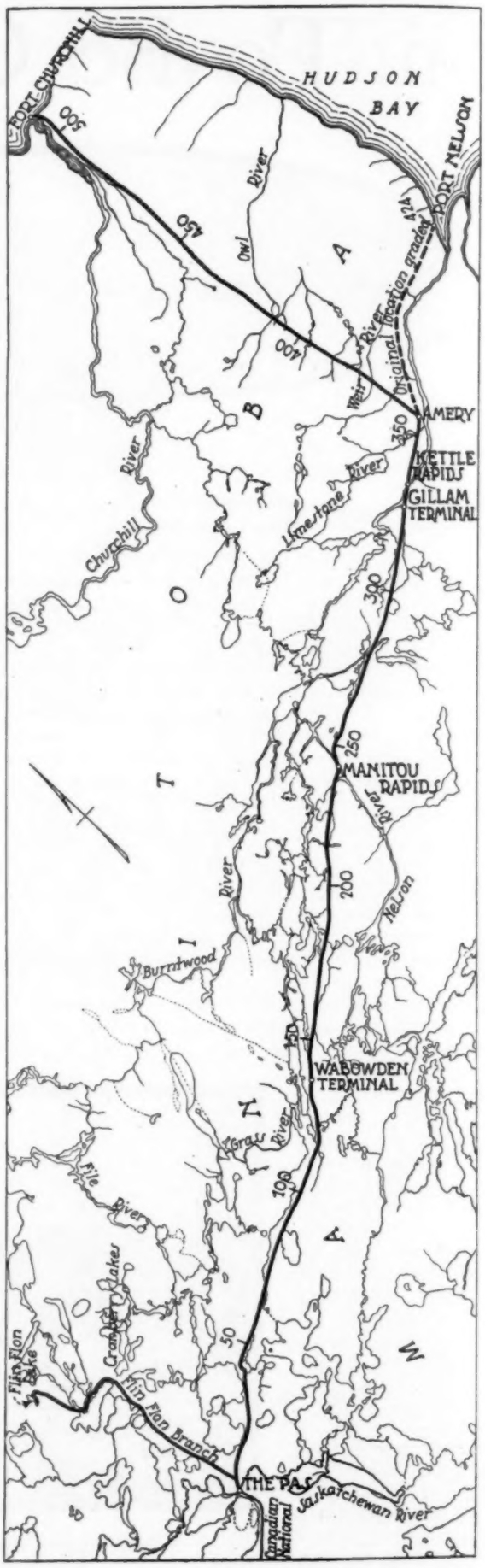
When work was discontinued in 1918, the line had been graded for its entire length, tracks had been laid and the roadway practically completed to Mile 333, and all stream crossings in this distance had been bridged. Among the most important of these crossings are those of the Saskatchewan river within a mile of The Pas, with four through truss spans of 150 ft. and a draw span of 250 ft.; the Manitou Rapids crossing of the Nelson river, comprising a deck cantilever structure of four spans having a total length of 608 ft.; and the Kettle Rapids crossing of the same stream, consisting of three through truss spans, 300 ft., 400 ft. and 300 ft. long respectively, built as a continuous structure from abutment to abutment.

Fort Churchill Finally Selected

However, when construction of the line was resumed in 1927, it was decided to abandon Port Nelson in favor of Fort Churchill as the port on Hudson bay, in spite of the greater rail mileage involved, because of the superiority of the site at Fort Churchill for the development of a harbor. Port Nelson is an open estuary requiring elaborate breakwater construction to provide even indifferent protection for shipping, while the mouth of the Churchill river at Fort Churchill affords almost an ideal land-locked harbor.

The decision to make this change in the objective raised a question as to the route to be adopted in making the diversion from the line to Port Nelson. The original location to Fort Churchill was shorter and involved less rise and fall, but to abandon any considerable part of the line already built would have resulted in a greater total cost for the entire project. Accordingly, it was decided to select the station of Amery (Mile 356) as the point of diversion, the new route beyond this point extending almost due north to Fort Churchill, or at an angle of about 50 deg. with the general direction of the original location.

The general location of the Hudson Bay line is northeast through the sag in the Laurentian plateau that makes it possible for the Nelson river to serve as a drainage outlet to Hudson bay for a large part of the prairie provinces and a portion of Minnesota and North Dakota. For fully half its length, the line threads its way through a network of lakes and small streams that stretch for 300 miles along the general course of the Nelson. The Pas is at Elev. 1190 and 10 miles further north the line reaches a summit at Elev. 1220, so the line must descend from that elevation to tidewater at its northern terminus. However, the changes in elevation are exceedingly moderate throughout the entire distance, so that in spite of adverse grades involving ascents of as much as 200 ft. northbound, it was not difficult to establish a ruling grade of 0.4 per cent against the northbound or loaded movement. The grade on the general southbound ascent is also 0.4 per cent, except for a short piece of 0.6 per cent grade north of Gillam terminal, Mile 326. The location also favors an excellent alinement; in fact, between The Pas and Amery, where the diversion is made to Fort Churchill, no part of the line lies more than 9 miles from an air line between those two points. Only

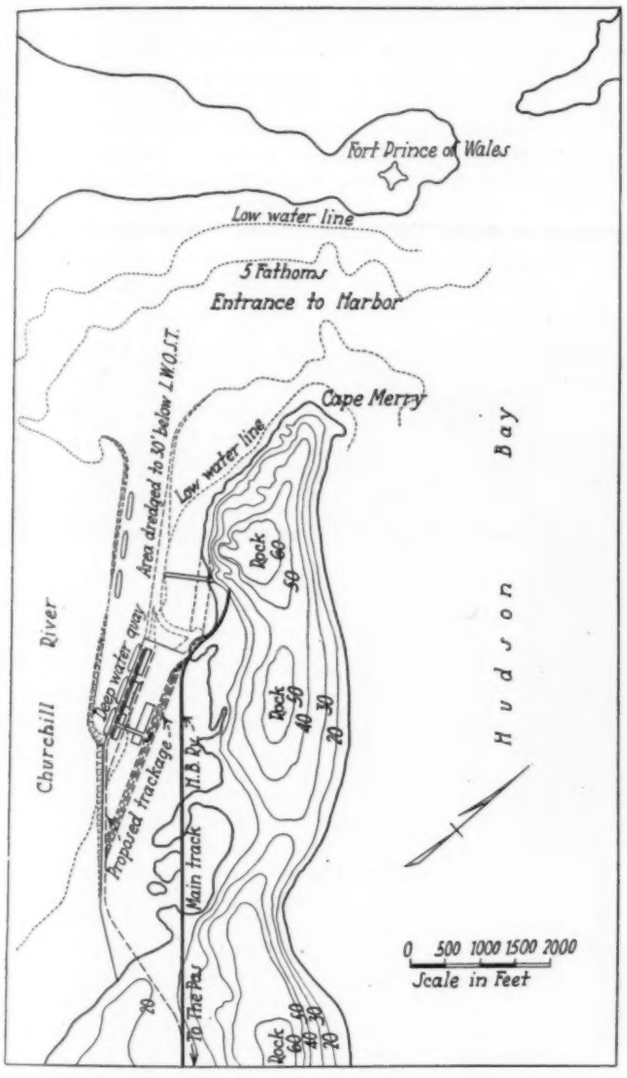


The Hudson Bay Line Lies in a Network of Streams and Lakes

12.6 per cent of the line is on curves, the maximum degree of curvature being seven degrees, but there are only a few curves in excess of three degrees. There is one tangent of 18 miles, also five of 10 miles or more and seventeen of 5 miles or more.

Character of the Country

For the first 90 miles of its length, the line passes through a limestone country covered in part with a thin overburden of clay or muskeg. From Mile 90 to Mile 140 it traverses a Precambrian formation with a heavy



The Mouth of the Churchill River Affords Excellent Opportunities for Harbor Development

overburden of clay and muskeg. The latter ranges from 6 to 8 ft. in depth and frost extends to a depth of 12 ft. The next 110 miles, Mile 140 to Mile 250, is in Laurentian rock with a clay overburden and but little muskeg, while from Mile 250 to Mile 350, there is no rock outcrop, except in the bed of the Nelson river, and the entire country is covered with muskeg, while frost goes to a depth of 14 ft. The remainder of the line is in flat muskeg country with occasional deposits of gravel and there is no outcrop except in the immediate vicinity of Fort Churchill. Along this part of the line, frost goes only to a depth of about 12 ft. In general, the location of the line is largely overgrown with light timber or brush, but on the northern end of the line, the timber dwindles to a mere stunted growth and for 30 miles passes through barren lands.

It is obvious that in a territory of the nature encountered, roadbed building consists principally of the construction of embankments of a height necessary to insure drainage and to provide a sufficient thickness of solid material to compensate for the subsidence of that portion of the stratum of muskeg which is subject to thawing during warm weather. As a result, 90 per cent of the line is on embankment. Bridges, other than those mentioned above and three other steel spans, consist of pile trestles which aggregate about 8,000 track ft. for the entire line.

The line, as originally built and as now being rehabilitated and extended, is constructed to what would be deemed high branch line standards, conforming in general to a well proportioned design for 80-lb. rail, which is being used throughout. The ties are cedar and treated soft wood. Passing tracks, generally 2,300 ft. long, are being built at 61 points along the line, or an average of 8½ miles apart. When the line is completed it will have 19 water stations and two intermediate engine terminals, in addition to one or two roadside coaling stations.

During the time that work on the Hudson Bay Railway was suspended, mixed trains were operated about twice a

Rock Cut Near the End of the Flin Flon Line

month from The Pas to Mile 214 and an occasional trip was made with a motor car to the end of track at Mile 333. No maintenance work was done other than such as was necessary to make the track barely passable. So when construction was resumed in 1927, the roadbed was found to be badly settled, the ties were nearly all in a condition requiring immediate renewal, the rails were out of surface and line bent, many of the pile trestles were seriously distorted by settlement and a number of them had been burned out. Consequently, the construction program for 1927 was confined primarily to a rehabilitation of the existing line, as it had to be put in condition to handle work trains and supply trains before work could proceed on the extension.

A Good Supply of Gravel

Fortunately, some large deposits of gravel are available along the line and this was used not only for ballasting, but also for raising and widening the embankments. During 1927, 1,069,700 cu. yd. of this material was handled in train haul, of which 668,600 cu. yd. was employed in reconditioning the embankments and for the filling of 2,200 ft. of trestles, and 401,100 cu. yd. was used in surfacing. A first lift was wade on 356 miles of track

and a second lift on 222 miles. Between The Pas and Mile 214 a dragline excavator removed 173,600 cu. yd. of material in widening wet and sliding cuts and took out 42,000 ft. of ditches. A total of 33,980 ft. of piles was driven in pile trestles. Ties to the number of 905,944 were delivered and 594,755 were inserted, and 4.3 track miles of rail were renewed.

Work was started and carried well toward completion on five-stall roundhouses and other engine terminal facilities at The Pas, Wabowden (Mile 136) and at Gillam (Mile 327), and water station facilities were provided at nine points. A coaling station of 90-tons storage capacity was built at Mile 214 and 16.7 miles of track were laid in sidings and yards. Operations under the heading of extension work were confined to the laying of track from Mile 333 to Amery (Mile 356) on the old embankment and certain preparatory work on the new line to Fort Churchill, this being limited largely to the driving of piles for trestles and the construction of some wooden box culverts. The most important bridge work was the construction of the crossing of the Limestone river, six miles south of Amery, consisting of two 80-ft. and three 90-ft. deck girder spans.

It was necessary to push all of the rehabilitation work to the utmost during the short working season, which extends from about May 1 to October 20, in order to have the line in condition during the winter for the delivery of materials for construction operations on the extension during the following season.

Typical Construction Views on the Fort Churchill Extension. Center—Corduroy Placed on the Roadbed in a Permanently Frozen Muskeg Cut. Right—Typical Ballasting and Train Fill. Below — Pioneer Outfit Laying Track.

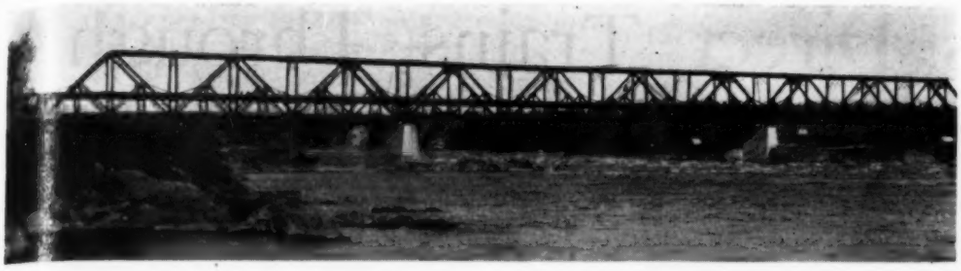
The Extension to Fort Churchill

The new line from Amery to Fort Churchill, 154 miles, ascends from Elev. 286 to a summit at Elev. 425 at Mile 400 and then descends by easy stages to tidewater level at the terminus. Differences in elevation are exceedingly slight and for the first half of the distance the location lies across the drainage of a number of shallow, sluggish creeks and rivers flowing to the east. Several shallow lakes are also encountered. The muskeg is encountered over almost the entire distance into Fort Churchill and is practically impassable when not frozen. Therefore, the grading and all other operations which can be conducted to advantage only when the muskeg is soft to some depth, must be handled by unit organizations established on the line before the spring thaw and equipped and provisioned so as to be substantially self-sustaining during the working season.

To this end, both the winters of 1927-28 and 1928-29 were occupied in moving material and supplies beyond the end of track to caches at the camp site of each unit of the working force and to the headquarters of each resident engineer, spaced about 10 miles apart. Horse-drawn sleds were employed in this service. Another important item of winter work was the establishment of the one practical means of getting over the line in the working season. This was a board walk composed of portable duck boards built over the low or wet portions of the right of way to enable the contractor's men, their supervisory forces and the railway's engineers to cover the work in their charge. About the only actual construction carried on in winter was the building of some of the wooden trestles and wooden box culverts, and some track laying mentioned hereafter. The grading has all been done by hand labor employed as station men, who built the low embankments from side barrow. This is a slow process, especially during the early part of the season before the thaw has extended to any appreciable depth. Under such circumstances, the moss and the earth are scraped off to the level of the frost, after which the work must be transferred to some other point until further thaw takes place.

Embankments so formed comprise an exceedingly unstable support for the work trains employed in track laying and were covered with brush, laid herring-bone fashion, and in addition, it was necessary to place wing ties before the train could proceed safely over the track. This delayed the track laying, because with one wing tie centered under each rail between each two track ties, it was necessary to carry ahead and set three times the normal number of ties per panel. For this reason, as many as 7,100 ties have been required per mile. At particularly soft places marked as "dangerous" by the engineers, 30-ft. stringers were laid crosswise in place of the wing ties. Wing ties, and stringers used for the same purpose, are taken up and moved ahead as the ballasting is done.

Because of the soft track condition, the ballasting follows closely behind the rail laying. Owing to the heavy settlement that takes place under train load, a considerable part of the gravel placed in this operation is virtually train haul fill applied on top of the soft roadbed made from side barrow. The quantities required are, therefore, considerably in excess of those normally needed for ballasting; for example, on 15 miles of line an average of 7,500 cu. yd. were used per mile and one mile required 18,000 cu. yd. Here again the builders were



Three-Span Continuous Truss Structure Across the Nelson River at Kettle Rapids

fortunate in discovering deposits of gravel, and pits were opened at Mileposts 350, 396, 412, 466 and 507.

Laid Rail on Frozen Muskeg

An exception to the general construction procedure described above was followed during the winter of 1928-29 when about 70 miles of track was laid on the frozen ground in advance of any grading and raised on ballast as soon as the pits could be operated.

The ditching and grading in the construction of this extension is being done under contract by Stewart and Sameron, Ltd., who have employed a force ranging from 600 to 1,000 men. The bridge work, track laying, train fill and ballasting have been done by railroad forces, which also did all rehabilitation work on the old line. The railroad forces during periods of maximum activity totaled about 1,000 men each on the old line and on the extension. From 3 to 4 steam shovels and from 4 to 7 locomotives were employed in ballasting and train fill on the new line, and 2 to 3 shovels and as many as 10 work trains were employed on the old line.

With two exceptions, all of the waterways on the Fort Churchill extension, which are unimportant streams, are bridged by wooden trestles, these two being the crossings of the Wier and Owl rivers, which are bridged by 100-ft. and 150-ft. through truss spans respectively, to eliminate the danger from ice. The use of a truss for a span of only 100 ft. is justified by the greater ease with which truss members could be transported and erected as compared with a plate girder span of the same length, considering the long haul for the steel as well as for the erecting equipment.

The Flin Flon Line

Concurrent with the construction operations for the completion of the Hudson Bay Railway, a branch line 88 miles long was extended in a northerly direction from Mile 5 to the Flin Flon mining property. This is the so-called Flin Flon line which was given rather widespread publicity during the summer of 1928 by reason of the rapidity with which construction was carried to completion. With plans calling for an expenditure of $25,000,000 in the development of this mine, located some 70 miles north of The Pas, the owners were without means of transportation other than winter freighting over the frozen muskeg and ice on the lakes, or circuitous canoe routes via the network of lakes and creeks during the summer. The construction of the 88 miles of railway was, therefore, an absolute essential for the beginning of development at the mine. Accordingly, a contract was entered into by the Hudson Bay Mining & Smelting Company and the Manitoba Northern Railway, all of the directors of which are officers of the Canadian National, except one, who represents the mining interests. The railway has a charter under the Province of Manitoba which provides a subsidy of $100,000 per year for five years against possible deficits in operation. The mining company contributed $250,000 toward the cost of the road. A contract also provided for the lease of the line to the Canadian National for operation under such terms that it becomes the property of the latter at the end of 20 years.

A contract for the construction of the line was signed on December 1, 1927, and provided for the completion of a workable railway before December 31, 1928. To meet this time limit in the face of the physical obstacles imposed, it was necessary to resort to an unusual expedient. For the first 50 miles, the line extends across flat muskeg involving little grading other than that necessary to provide a stable roadbed on the soft foundation, while for the remaining 38 miles, it lies among ridges of hard Precambrian rock separated by a series of lakes. This portion of the line called for heavy work, largely side-hill rock cuts and fills. The date for the completion of the line was, therefore, determined by the time necessary to complete this heavy work, but there were no roads over which the shovels, locomotives and cars could be transported to the site of these operations. However, to wait until the first 50 miles of the line had been completed was out of the question.

How the Work Was Done

The expedient by which this situation was met was to lay the first 50 miles of track over the frozen muskeg and swamps in the winter, haul in the equipment over this track, including some scows and materials for rafts on which the grading outfits could be floated over the lakes and distributed along the line which bordered these lakes. Gravel pits were opened up along the first section of the line and as soon as these could be operated in the spring, the track across the muskeg was raised on train-haul fill from these pits and ballasted. The railroad was opened for operation on September 21, 1928, more than three months ahead of the construction date. The line was built by the Dominion Construction Company and W. S. Tomlinson.

In November, 1928, the owners of the Sherritt-Gordon mine effected an agreement with the Canadian National to build a 42-mile branch line to that mine, with the provision that the mining company provide a cash guarantee of $1,000,000, with a cash bonus of $125,000 for quick construction. The Dominion Construction Company and W. S. Tomlinson are also building this line.

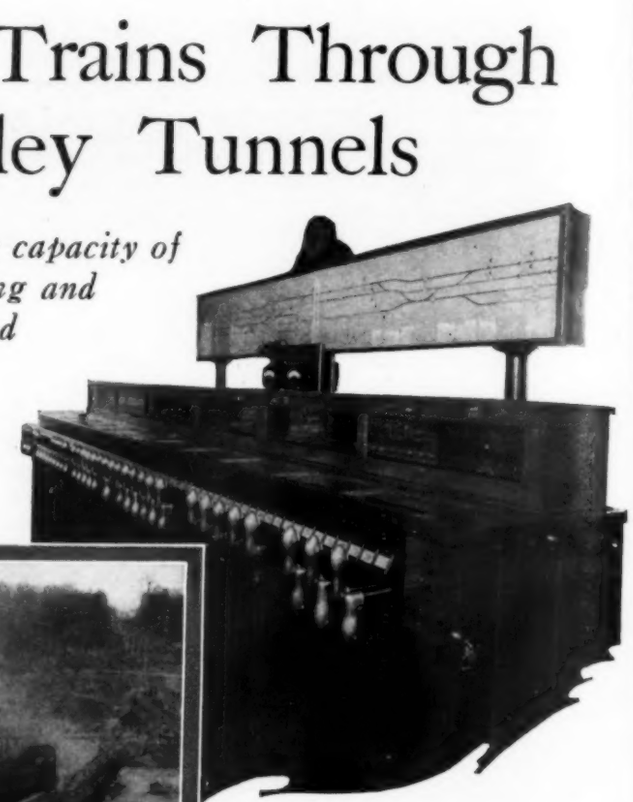
The construction of the Hudson Bay Railway has been under the general supervision of C. S. Gzowski, chief engineer of the construction department, Canadian National, Montreal, Que., and H. A. Dixon, chief engineer, Western region, Winnipeg, Man., while Major J. G. MacLachlan has immediate charge on the ground.

THE PENNSYLVANIA will open a "Travel Shop" at 360 North Michigan avenue, Chicago, in the near future. The purpose of the new office is to provide a convenient place where travelers may "shop" for travel information, and to assist travelers in selecting routes through this company's various rail, air and steamship connections.

Signals Direct Trains Through Lehigh Valley Tunnels

New double-track bore increases traffic capacity of busy line—All-electric interlocking and automatic train stop employed

By H. W. Lewis
Signal Engineer, Lehigh Valley



Above—An Illuminated Track Diagram is Mounted Over the Machine

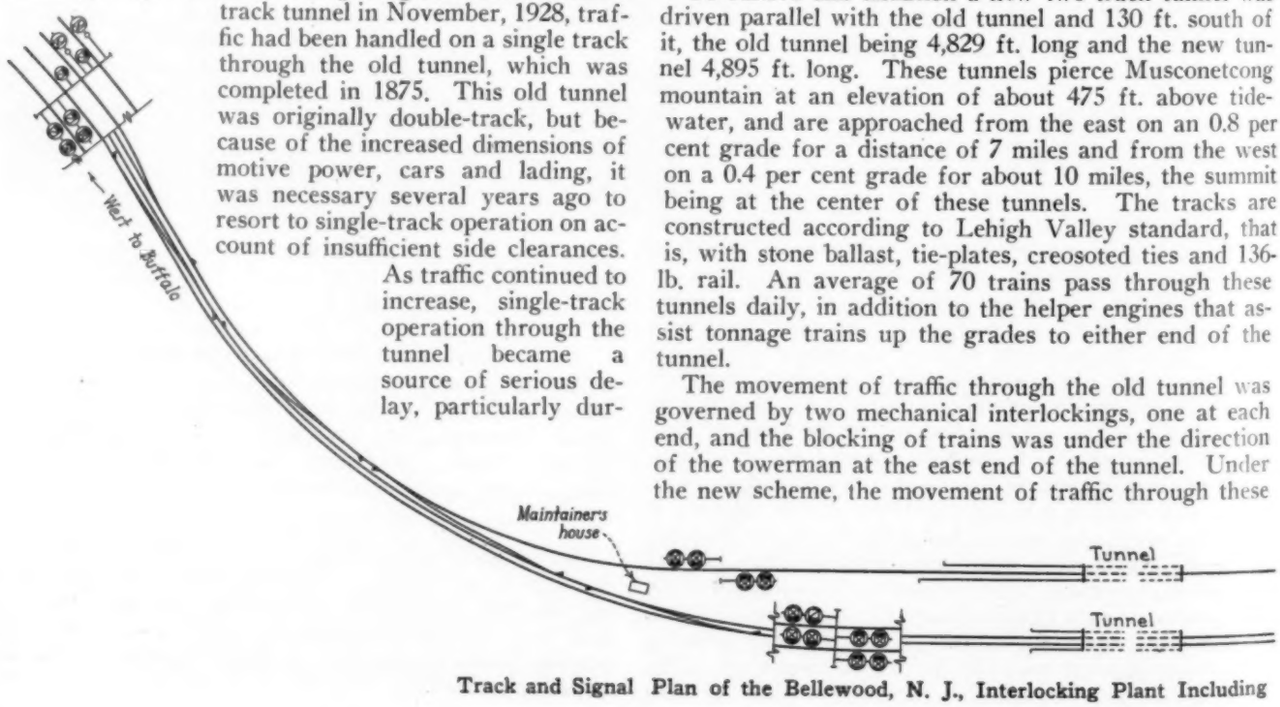
Left—The Westbound Black Diamond Entering the Double-Track Tunnel

SIGNAL indications are now used to direct all train movements through the two Lehigh Valley tunnels through Musconetcong mountain near Pattenburg, N. J. Prior to the opening of the new double-track tunnel in November, 1928, traffic had been handled on a single track through the old tunnel, which was completed in 1875. This old tunnel was originally double-track, but because of the increased dimensions of motive power, cars and lading, it was necessary several years ago to resort to single-track operation on account of insufficient side clearances.

As traffic continued to increase, single-track operation through the tunnel became a source of serious delay, particularly during the last few years when it had been necessary to provide four tracks leading up to each end of the tunnel.

To relieve this situation a new two-track tunnel was driven parallel with the old tunnel and 130 ft. south of it, the old tunnel being 4,829 ft. long and the new tunnel 4,895 ft. long. These tunnels pierce Musconetcong mountain at an elevation of about 475 ft. above tide-water, and are approached from the east on an 0.8 per cent grade for a distance of 7 miles and from the west on a 0.4 per cent grade for about 10 miles, the summit being at the center of these tunnels. The tracks are constructed according to Lehigh Valley standard, that is, with stone ballast, tie-plates, creosoted ties and 136-lb. rail. An average of 70 trains pass through these tunnels daily, in addition to the helper engines that assist tonnage trains up the grades to either end of the tunnel.

The movement of traffic through the old tunnel was governed by two mechanical interlockings, one at each end, and the blocking of trains was under the direction of the towerman at the east end of the tunnel. Under the new scheme, the movement of traffic through these



Track and Signal Plan of the Bellewood, N. J., Interlocking Plant Including

tunnels is governed by an electric interlocking, semi-automatic signals, and an intermittent inductive train control, all under the control of the towerman at Bellewood, N. J. All tracks are signaled for traffic in both directions, enabling the towerman to move trains in either direction on any track by signal indication, without the use of written train orders. The new plant dispensed with the services of three towermen at the west end of the tunnel.

Control Facilities

These facilities are controlled from a General Railway Signal Company Model-2, unit-lever type electric interlocking machine having 67 working levers and 13 spare spaces. This interlocking plant is exceptionally long, being 1.9 miles from the eastern to the western limits. These new facilities were placed in service in accordance with the following special notice:

"Effective 8:25 a. m. Monday, November 26, 1928, the new tunnel and interlocking plant will be placed in service at Bellewood, N. J. The tracks will be numbered as follows:

Present tunnel.....No. 1 track
New tunnel.....No. 2 and No. 4 tracks

"Movements in both tunnels will be made in either direction as indicated by signals. Signals will be operated in accordance with Rules 601a, 601b, 601c, 601e, 601f, and 601gg.

"Train movements between the first signal bridge west of Pattenburg and the first signal bridge east of West Portal will be governed by interlocking rules. Special instructions in the time table relating to the Musconetcong tunnel are modified accordingly. Helper engines on the rear of trains will be governed as follows: 'If the entrance signal to the tunnel indicates *Stop*, the helper engine will uncouple and stop before passing the entrance signal. If the entrance signal indicates *Proceed at slow-speed with caution, prepared to stop short of train or obstruction* (Rule 601gg), the helper engine will assist the train through the tunnel.'

"At the same time, automatic signal *652* governing movements on No. 2 track and signal *652a* governing movements on No. 4 track, located west of West Portal, and automatic signal *621* governing movements on No. 1 track and signal *621a* governing movements on No. 3 track, located East of Pattenburg, will be changed to operate in accordance with Rules 501aa, 501b, 501c, and 501e."

The helper engines stop pushing and cut off at the tunnel entrance signals, except that if the indication of Rule 601gg is displayed, they continue pushing through the tunnel. If "Stop" is displayed, (Rule 601a) they stay until the indication of Rule 601b is displayed and then proceed by it, when the towerman sets the route and signal for them to return down the mountain.

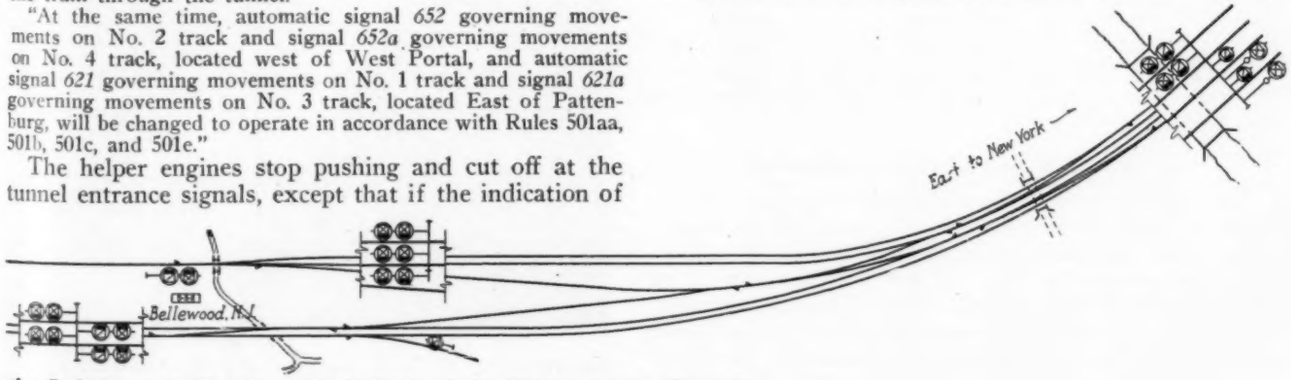
A Specially Designed Signal Tower

Adjustable Rail Braces are Used Both Inside and Out on the Tie Ahead of the Points

Power Supply

The power supply delivered at this tower is 260-volt, 60-cycle, single-phase, transformed either up or down to the required voltage for the a-c. apparatus and for charging 114 cells of 160-a. h. Type EMG-9 Exide storage battery, operating the 220-volt d-c. Model-5A switch machines and related d-c. apparatus. This storage battery is housed in the basement of the tower and is carried on a concrete rack. The motor-generator sets supply the d-c. and a-c. current. For emergency service, in case of a power line failure, a Model-HYRR, 10-kva. gasoline-electric emergency generator set will automatically cut in and supply the plant with 60-cycle current during the interval of failure. It starts automatically on failure of the normal supply, picks up and carries the load until restoration is made manually after the resumption of the normal supply. Power is generated up to the capacity of the unit at 220 volts a-c., 60-cycles, single-phase. The power board, with switches and automatic devices, controls energy for the operation of the plant.

Rubber-covered, taped and braided copper wire for the power, operating and control circuits are distributed in built-up trunking carried on concrete stakes. The wires for the west end of the tunnels are carried over the mountain in shot-proof cables, which are joined every 1,000 ft. in regular junction boxes, thus greatly



the Switches and Signals at Both Ends of the Musconetcong Tunnels

facilitating the handling of these heavy cables over the mountain during construction and also aiding in testing.

This new interlocking is maintained by three signal maintainers, each working eight hours. Their headquarters are at the west end of the tunnels; a local telephone is installed in their building for calling them in case of emergency. Other telephones are located conveniently so that trainmen may communicate with the towerman when necessary.

Barge Line Asks Lower Basis for Joint Rates

WASHINGTON, D. C.

THE Inland Waterways Corporation has filed with the Interstate Commerce Commission a petition for a modification of its order of April 8 in *Ex Parte 96* in which it prescribed a general formula for determining the joint through rates which it directed should be established between the rail lines and the federal barge line, so as to accomplish the establishment of specific joint rates by deducting from the lowest all-rail rates a uniform differential of 20 per cent of the lowest all-rail rate applicable between ports on the barge line. A somewhat similar request was made by the barge line in its original application for joint rates but the commission prescribed instead a formula using 10 per cent in some cases and 20 per cent in others, depending on the relative length of the rail and water hauls involved.

As an initial proposition the barge line asked that joint rates be established between points in Central Freight and Western Trunk Line territories and points in Texas and Louisiana on this basis, stating that it is presumed that little traffic could move via the barge line from points outside the territory named because of the lower ocean rates via Atlantic ports. It asks for the rates via rail carriers forming practicable working routes north or east of St. Louis, East St. Louis or Cairo and the barge line and point of interchange and, (1) Baton Rouge or New Orleans and Vicksburg and lines forming practicable working routes to and from all points in Louisiana and Texas on and south of the lines of the Missouri Pacific and Southern Pacific, Baton Rouge to El Paso; and (2) Vicksburg, Miss., and rail lines forming practical working routes to or from points in Louisiana and Texas north of the above line. Such rates would be constructed, according to the proposal, by deducting from the lowest all-rail rates contemporaneously applicable between the same origin and destination points 20 per cent of the lowest all-rail rate between St. Louis and New Orleans on traffic destined to or originating at points in Louisiana and Texas south of the line or between St. Louis and Vicksburg on traffic destined to or originating at all other points in Texas and Louisiana.

Rail and Barge Line Negotiations

The petition refers to negotiations with the rail carriers in efforts to establish the joint rates and states that none of the rail carriers has been able to offer or suggest any practical solution of the problem because of their interest in the question of the divisions of the joint rates. It says that after several months of investigation and study it is convinced that the manner of determining reasonable rail-barge-rail routes and rates can best be met by individual handling of the particular situations and that delay can be avoided only by the adoption of the "standard" 20 per cent differential in place of the varying differential proposed by the commission, which, it is declared, would cause unwarranted and extensive discriminations.

The "impracticable and unreasonable adjustment" of routes and rates prescribed by the commission's order, the petition says, is not in substantial accord with the intent of the law as such an adjustment "does not afford the public the benefits of a systematic and practical adjustment of differential rates which were clearly intended by the law."

"It may be argued that this reduction will work to the advantage of the users of water transportation only and to the disadvantage of the users of rail transportation," the petition continues. This argument is without foundation, however, as a more adequate and cheaper national transportation system will increase the prosperity of the whole country. . . The law provides that the commission must fix reasonable differentials. In this proceeding the commission prescribed 20 per cent differentials in some cases and 10 per cent differentials in others, this variation being based on the theory that as the haul increases the economy effected in the water portion of said haul decreases, and because, unless a diminishing differential is used the difference will be too great in the rate to and from points enjoying differential rates, as compared with nearby points where no differential rates are established.

"Differentials based on the standard 20 per cent basis may be too high in some cases and may be too low in some cases, but it is a fact that the basis has been employed for a number of years and an adjustment of differential rates, covering a large portion of the territory has been established thereon. To compile necessary data to prove whether or not the differentials on a 20 per cent basis accurately reflect the proper differentials in the cost and value of all-rail service versus differential service is practically impossible."

* * *

Undercrossing of State Highway No. 46, Missouri-Kansas-Texas, New Braunfels, Tex.

The Milwaukee Holds Its Gains

Traffic and revenues this year exceeding those of last, which was best in history—Rate level inadequate

THE Chicago, Milwaukee, St. Paul & Pacific, which is rounding out the second year of its corporate existence, is enjoying the highest gross revenues in the history of the property now owned by this company. In 1928 gross operating revenues exceeded those of prior years, being $7,612,080 greater than in 1927. During the first eight months of the present year, however, gross operating revenues exceeded those of the same period in 1928 by 3.6 per cent. Nevertheless, with this increase in gross revenues, net railway operating income is still inadequate —only 3.84 per cent on property investment and 4.17 per cent on the Interstate Commerce Commission's valuation in 1928—a situation which the Milwaukee faces in common with other railroads in the Northwestern region arising from an abnormally depressed rate level.

Revenue and expense statistics and ratios for the first eight months of the current year as compared with the same period last year are given in Table 1. It will be noted that freight revenues increased 4.1 per cent and that passenger revenues declined 6.6 per cent, the increase in total operating revenues being 3.6 per cent. Maintenance of way and maintenance of equipment expenses increased in direct proportion to increased gross revenues so that their ratios to such revenues

Table I—Revenues and Expenses—Eight Months

	1929	1928	+ Increase or — Decrease Per cent
Freight Revenue	$90,567,053	$87,031,831	+ 4.1
Passenger Revenue	11,534,717	12,344,257	— 6.6
Total Operating Revenue	113,657,985	109,692,067	+ 3.6
M. of W. Expenses	19,176,415	18,594,838	+ 3.1
M. of E. Expenses	20,786,245	20,022,095	+ 3.8
Transportation Expenses	40,374,384	38,770,087	+ 4.1
Total Operating Expenses	86,579,888	83,379,499	+ 3.8
Net Ry. Oper. Income	16,457,573	16,106,573	+ 2.2
M. of W. Ratio %	16.9	16.9	..
M. of E. Ratio %	18.3	18.3	..
Transportation Ratio %	35.5	35.3	+ 0.6
Operating Ratio %	76.2	76.0	+ 0.3

remained unchanged at 16.9 per cent and 18.3 per cent respectively. A fractional increase occurred in the transportation ratio, that index standing at 35.5 per cent of operating revenues for the first eight months of 1929 and this increase occasioned a minute rise in the operating ratio which was 76.2 per cent for the first eight months of this year as compared with 76.0 for the same period of 1928.

The Milwaukee's tonnage is highly diversified, with a relatively large percentage of agricultural products (15.9 per cent of the total in 1928). Products of animals accounted for 5.1 per cent; mine products 36.4 per cent; forest products, 15.4 per cent; manufactures and miscellaneous, 24.2 per cent; and L. C. L., 3.0 per cent. The revenue per ton-mile of revenue freight was 1.037 cents and the average haul of revenue freight 263 miles. The company in 1928 originated 67 per cent of the revenue tonnage it handled, and 48 per cent of total tonnage was both originated and terminated on its lines.

A comparison of selected freight service operating statistics for the first seven months of 1929 and 1928 is shown in Table II. The outstanding improvements to be noted include a 4.2 per cent increase in net ton-miles

Table II—Comparison of Selected Freight Operating Statistics—Seven Months

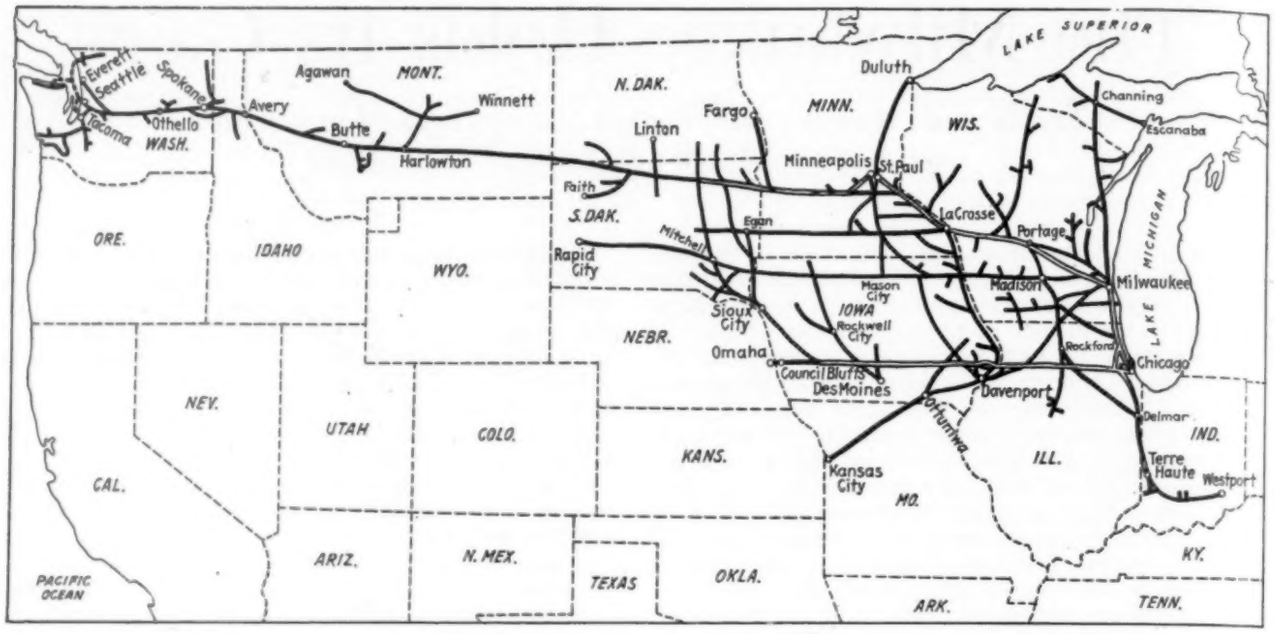
	1929	1928	Per cent of change Inc.	Dec.
Mileage operated	11,246	11,248	...	...
Gross ton-miles (thousands)	20,261,287	19,493,320	3.9	
Net ton-miles (thousands)	8,471,557	8,132,072	4.2	
Freight train-miles (thousands)	11,688	11,209	4.3	
Freight locomotive-miles (thousands)	13,343	12,728	4.8	
Freight car-miles (thousands)	538,743	524,018	2.8	
Freight train-hours	916,907	870,695	5.3	
Car-miles per day	34.1	35.1		2.9
Net tons per loaded car	24.7	24.3	1.6	
Per cent loaded to total car-miles	63.6	63.7		0.2
Net ton-miles per car-day	537	544		1.3
Freight cars per train	47.1	47.7		1.3
Gross tons per train	1,734	1,739		1.3
Net tons per train	725	725	...	...
Train speed, miles per train-hr.	12.7	12.9		1.6
Gross ton-miles per train-hour	22,097	22,388		1.3
Net ton-miles per train-hour	9,239	9,340		1.1
Lb. coal per 1,000 gross ton-miles	134	132	1.5	
Loco.-miles per loco.-day	67.7	62.7	8.0	
Per cent freight locos. unserviceable	15.1	14.5	4.1	
Per cent freight cars unserviceable	3.0	3.4		11.8

accompanied by only 3.9 per cent more gross ton-miles; an 8 per cent increase in average daily locomotive mileage; and a decrease of 11.8 per cent in unserviceable freight cars.

It will be recalled that the improvement in operating performance of the Milwaukee in 1928 following the receivership was most spectacular. Net railway operating income rose from $14,072,934 in 1927 to $29,119,053 in 1928. Statistics of performance this year show that the gains have been maintained and that the road has been able, generally speaking, to continue its operation at the standard set in 1928. Last win-

Table III—Chicago, Milwaukee, St. Paul & Pacific (or C. M. & St. P.) Operating Results, Selected Items, 1916-1928

Year Ended	Mileage	Revenue Tons	Revenue Ton-miles (thousands)	Revenue Ton-miles per Mile of Line	Average Haul	Revenue Train Load	Revenue per Ton-mile (cents)	Total Operating Revenues	Total Operating Expenses	Net Operating Revenue	Corporate Net Income
1916	10,196	39,986,136	10,747,323	1,054,072	269	442	0.741	110,609,689	73,765,051	36,844,638	16,068,260
1917	10,257	38,444,353	10,545,443	1,028,122	274	468	0.758	113,739,202	85,195,964	28,543,238	4,468,632
1918	10,303	40,307,047	11,504,301	1,116,597	285	536	0.840	132,894,455	122,196,105	10,698,350	6,241,510
1919	10,647	40,295,220	11,501,514	1,080,259	285	554	0.924	150,370,394	138,561,705	11,808,689	7,643,045
1920	10,624	45,041,277	11,384,601	1,071,593	253	544	1.029	168,158,734	164,697,121	3,461,613	4,366,071
1921	10,809	34,067,136	8,283,212	766,325	243	483	1.266	146,765,766	127,957,002	18,808,764	d.11,070,609
1922	11,030	42,034,285	10,601,914	961,189	252	543	1.094	156,950,628	129,596,696	27,353,932	d. 6,143,168
1923	11,011	51,314,300	11,922,244	1,082,758	232	551	1.073	169,628,338	134,999,228	34,629,110	207,686
1924	10,986	47,143,747	11,004,765	1,001,624	233	571	1.091	158,366,459	125,550,061	32,816,398	.....
1925	11,204	49,589,057	11,966,830	1,067,991	241	625	1.050	162,020,693	130,449,632	31,571,061	.....
1926	11,192	49,003,529	11,978,810	1,070,552	244	628	1.039	160,538,440	128,401,168	32,137,272	.....
1927	11,208	49,289,106	12,529,704	1,118,218	254	637	1.020	162,942,819	133,505,998	29,436,821	.....
1928	11,251	48,948,773	13,142,634	1,168,464	263	652	1.037	170,554,899	125,240,631	45,314,268	9,250,332



The Chicago, Milwaukee, St. Paul & Pacific

ter was unusually severe in the Milwaukee's territory, which did not tend to simplify its operating problems.

The company, at the end of August this year had 1,687 locomotives with an average tractive effort of 39,491 lb. Its freight locomotives on the same date totaled 1,190 with an average tractive effort of 43,-639 lb.

The Milwaukee, at the end of 1928, had income of $30,498,753 available for interest on its funded debt. This interest totaled $12,093,097 on fixed interest-bearing obligations and $9,143,684 on the 5 per cent convertible adjustment mortgage bonds. Interest, thus, was earned 2.5 times on fixed-interest obligations and, thereafter, more than twice over on the adjustment bonds. Net income after all deductions was $9,250,-332, which was carried to profit and loss and added to the corporate surplus. This net income would have been sufficient to have paid the 5 per cent dividends on the non-cumulative (whether earned or not) preferred stock and $2.80 per share on the outstanding no-par common. Net income was transferred to surplus, as noted above, however, rather than paid out in dividends—patently the wise course in view of the fact that the new company started its career without any profit and loss surplus for purposes of protecting its interest obligations in "lean" years.

The earnings shown, however, in the very first year of reorganization and the manner in which they have been maintained this year promise well for the future of the property. They would become doubly significant if the rate level in the company's territory were to be increased to a more-nearly-legal basis and if industrial and economic conditions in the Northwest should continue to show reasonable improvement. Nor, it may be supposed, has the Milwaukee reached an end to the improvements in operating efficiency arising out of judicious capital expenditures and constant progress in developing more efficient operating methods.

* * * *

On the Main Line of the Pennsylvania, near Trenton, N. J.

Depreciation Plan Opposed

Proposed report by Commissioner Eastman called highly objectionable to railroads

WASHINGTON, D. C.

COUNSEL for the Presidents' Conference Committee have filed with the Interstate Commerce Commission a brief and statement of exceptions to the proposed report by Commissioner Eastman recommending the establishment of a system of depreciation accounting, which they characterize as "a revolutionary proposal" and one which, if made effective, "would injuriously affect the railroads, the investors in railroad securities and the public." The commission is asked to reject the report and decline to make it effective and it is suggested that opportunity be afforded to finally settle by judicial decree the important questions of principle involved before any order in the premises is made effective. Oral arguments on the proposed report relating both to depreciation and to proposed changes in the accounting classifications will be heard by the commission on December 5 and 6. The general statement in the brief, which is followed by the detailed exceptions, is in part as follows:

The matter to be considered is a proposed mandatory requirement that common carriers by railroad establish for their physical properties what the proposed report calls depreciation accounting, but which goes much beyond a method of accounting for the cost of properties consumed in operation, and directly affects the capital accounts of the railroads and the values of their properties.

It is a revolutionary proposal and if made effective would injuriously affect the railroads, the investors in railroad securities and the public. The effort is herein made by appropriate exceptions to demonstrate this conclusion, and the commission is earnestly urged to give careful consideration thereto.

The commission, under its power to prescribe a uniform system of accounting for all carriers, made a mandatory order in the year 1907 that the carriers set up depreciation accounting for their equipment, and later permitted them, in their discretion, to set up similar accounts for their fixed properties. The carriers were left free to prescribe their own rates of depreciation. Under these orders carriers are now maintaining what are called depreciation reserves for their equipment, but which in fact are retirement reserves, but only a few have availed themselves, and these to a limited extent only, of the option to establish such so-called depreciation reserves for their fixed properties. They believe, as a rule, that the retirement and replacement method of accounting, whereby the replacement cost of a retired unit of property is charged to operating expenses at the time of the retirement, provides a more satisfactory and a decidedly more accurate accounting.

In 1920 Congress amended paragraph 5 of section 20 of the interstate commerce act in the matter of depreciation accounting, the particulars of the amendment being hereinafter set out, and on August 23, 1923, the Commission gave notice to the carriers and other interested parties that in order to carry out paragraph 5 of section 20 of the interstate commerce act as so amended, it had organized a Depreciation Section in its Bureau of Accounts, which Depreciation Section had made a preliminary investigation and reported its tentative conclusions and recommendations, a copy of which report was furnished the carriers and other interested parties.

A public hearing upon the subject-matter of the said report, in pursuance of the order of the commission, was held before Division 4 of the commission during the month of November, 1923. Permission was given to all interested parties to thereafter file briefs, and the Presidents' Conference Committee, through its counsel, filed a brief on February 21, 1924, dealing in a comprehensive way with the isues involved *in so far as they had at that time been developed.* The chief interest of the railroads at that time was to preserve the retirement and replacement method of accounting for the maintenance cost involved in the retirement of properties.

On April 18-19, 1924, oral argument was submitted to the full commission, not alone in Docket 15100, Depreciation Charges of Steam Railroad Companies, but also in Docket 14700, Depreciation Charges of Telephone Companies.

Commission's Previous Report

On November 2, 1926, the Commission handed down a joint report and order in said dockets, the report exclusive of the order being composed of some 116 pages. An examination of the said report and order disclosed that it covered and included matters of both principle and detail which had not been considered or discussed at the hearings.

The preliminary report of the Depreciation Section, on which the hearings were based, after referring to the amendment to paragraph 5 of section 20 of the interstate commerce act and distinguishing between retirement or so-called depreciation accounting and depreciation in valuation, said:

"It is important to remember from the outset that this amendment is incorporated in a paragraph of the interstate commerce act which deals *exclusively* with the regulation of accounting matters. It therefore follows that any regulations promulgated under its provisions must necessarily be confined to depreciation as an *accounting requirement.*" (Italic ours.)

In accordance with this recommendation, the hearings were confined to the matter of accounting for retirements considered simply as an accounting requirement, but the report and order of the commission later promulgated, went much beyond the matter of accounting, and besides affecting the content of the operating expense account, entered the field of valuation and of the capital account and required the setting up valuation results in the accounts of none of which matters was considered at the hearings.

The report of the commission said that the "basic question" submitted for decision was whether the cost of property consumed in the operation of a railroad "should be charged in bulk at the time when each unit is retired, or should be anticipated by periodical installments spread over its service life." The conclusion reached in the report, however, went much beyond a decision that the operating expense involved should be anticipated by periodical installments spread over the service life of the property retired, and decided in express and direct terms that an essential and necessary part of the plan for the depreciation accounting therein directed, is that the depreciation reserve directed to be set up shall measure the actual depreciation in the property, and must be "deducted in determining the amount on which the company is entitled to a fair return."

The report and order also included "findings" and directions in the matter of "past accrued depreciation," meaning the depreciation, as determined by the methods of the commission, existing in the properties on the effective date of the order; also "findings" and directions in the matter of what the report called "extraordinary repairs," and "findings" that the track accounts, which the Depreciation Section had recommended be excluded from the provisions of the order, be nevertheless included therein. There were other "findings" which had not been considered or discussed in the hearings.

Based upon a consideration of this situation, and upon the fact of their very serious objections to the report and order, the committee sought a postponement of the effective date of the order, and in connection therewith on July 5, 1927, filed a petition for rehearing.

On May 6, 1927, the commissison gave notice that the effective date of the order in Docket 15100 had been postponed from January 1, 1928, to January 1, 1929, and on July 11, 1927, made an order in said docket that the proceeding therein be reopened and assigned for further hearing November 9, 1927.

In connection with the rehearing thus granted, the carriers were notified that hearings would be held simultaneously in Ex Parte 91, involving the Classification of Accounts, and were also advised that the proceedings in Docket 14700, Depreciation Charges of Telephone Companies, had likewise been reopened for further hearings, which would be had in connection with Dockets 15100 and 91. Hearings in each of the said dockets were had at which quite voluminous testimony was submitted.

The proposed report now under consideration is the result of said hearings, and although some of the objectionable features of the original report have been therein slightly modified. it is highly objectionable to the railroads as will hereinafter appear.

The committee understands that, except as the proposed report amends or changes the original report in said docket, the findings of the original report but not the order, stand, and are now subject to whatever exceptions thereto the carriers may wish to file.

The entire proceeding being reopened, the committee also understands that the record of the original hearing is now just as much before the commission for consideration as is the record of the rehearing. They further understand that the brief which they filed on February 21, 1924, in so far as it is applicable to the proposed report, is likewise still before the commission for its consideration, and they earnestly ask in the light of the developments of the rehearing that fresh consideration be given to it.

The committee seriously questions the commission's interpretation of the 1920 amendment to paragraph 5 of section 20 of the interstate commerce act; they seriously question the power of the commission to make the proposed order; they seriously question the correctness of the commission's theory of what constitutes depreciation in valuation which theory is applied in the proposed report, and they believe the proposed order to be an unjust invasion of the inherent managerial power residing in the railroads.

They believe, whatever may be the best method of accounting for the operating expense involved in the maintenance of properties, that such accounting is a thing entirely separate and apart from the determination of actual depreciation in the valuation of physical properties and has no relation thereto, and that the proposed report is fundamentally in error in assuming the two things to be one and the same thing.

They believe that any bookkeeping reserve which carriers may be required to set up out of their earnings as a device for equalizing operating expenses, is not evidence of a "reimbursement" to them by anybody.

They believe that to charge operating expenses in order to create such reserves simply means a decrease of the net income of the carriers derived from earnings, to the detriment of their stockholders to whom such income belongs, and that the direction in the proposed report that reserves so created be considered as a "reimbursement" to the carriers for property retired is fallacious as a matter of economics and is in violation of law.

They believe that the commission is not authorized, nor is it wise, to require the carriers to subdivide the investment accounts on their balance sheet by setting up therein the commission's pre-war estimated reproduction costs.

They believe that the proposed system of accruing depreciation charges violates the carriers' legal right to charge operating expenses with the cost of maintaining their property and the value thereof, since the order erroneously directs accruals on the basis of the investment in the property, or on an assumed approximation of its original cost, and denies the right to charge to operating expenses the current cost of replacements.

Their exceptions which follow include exceptions on the fundamental grounds as thus stated, and in addition but subject thereto, exceptions to certain of the details of depreciation accounting set out in the proposed report. The brief also contains a discussion of certain matters upon which the proposed report invites discussion.

Report In Conflict with Court Decisions

At the outset of their exceptions to the proposed report the committee would respectfully point out that what is now proposed to be done in the matter of retirement accounting, misnamed depreciation accounting, in addition to involving an important legal principle in the matter of the meaning, use, and control of so-called depreciation reserves, also directly and immediately involves the dispute, long existing, between the carriers and the commission as to what constitutes depreciation in valuation. The theory of the commission, first laid down in the Texas Midland valuation in 1917, is adopted in the proposed report, and carriers will be required under the proposed report to set up depreciation in their books determined in accordance therewith. The carriers have always protested against this theory on the ground that it is unsound in economics and contrary to law. They regard this issue as definitely settled by the many court decisions hereinafter cited. If the commission believes that there is a reasonable doubt as to the status of the law, it seems to the committee just, and also wise as a matter of administrative expediency, that an opportunity be afforded to secure a further judicial review of the issues raised by them regarding depreciation and depreciation reserves, before any depreciation accounting order of the character now proposed is promulgated or made effective. The importance of this suggestion is emphasized by reason of the statement appearing in the original report, which is hereinafter referred to, that if the courts shall hold that the depreciation reserve, accrued as is proposed, does not measure the accrued depreciation in the physical properties and cannot be deducted in the ascertainment of a rate base value, a reconsideration by the commission of the entire question of depreciation accounting would at once become necessary.

Manifestly it would be a great injustice to the railroads to require them to inaugurate a system of accounting, revolutionary in character and costly to establish and maintain, when the court decisions clearly indicate the invalidity of the system proposed.

The original report of the commission in this proceeding was filed November 2, 1926. It was admittedly predicated upon the theory that the value for regulatory purposes should be determined upon the investment made in producing the plant.

In May, 1929, the Supreme Court of the United States decided the *O'Fallon* Case, 49 Sup. Ct. Rep. 384. In that decision the court said:

"The elements of value recognized by the law of the land for rate-making purposes have been pointed out many times by this Court. *Smyth v. Ames*, 169 U. S. 466, * * * *McCardle v. Indianapolis Water Co.*, 272 U. S. 400. Among them is the present cost of construction or reproduction."

In the *McCardle Case*, 410, the Court said:

"In fact, prices and values have so changed that the amount paid for land in the early years of the enterprise and the cost of plant elements constructed prior to the great rise of prices due to the war do not constitute any real indication of their value at the present time. * * *

"If the tendency or trend of prices is not definitely upward or downward and it does not appear probable that there will be a substantial change of prices, then the present value of lands plus the present cost of constructing the plant, less depreciation, *if any*, is a fair measure of the value of the physical elements of the property." (Italics ours.)

It thus appears that in May, 1929, some two years after the first report in Docket 15100 was filed, the Supreme Court declared that the law of the land requires the rate-making base to be predicated upon actual value and not upon investment, and, further, that depreciation should only be deducted in cases in which there was found to be actual depreciation. This is in obvious conflict with the position taken by the commission in its original report.

The proposed report now under consideration was filed August 15, 1929, less than six months after the decision of the O'Fallon case by the Supreme Court. It not only makes no reference to the decision of the Supreme Court disapproving the fixing of a rate base on the investment theory, but states, on page 3:

"Pages 320-323 (of the First Report) contained a discussion of authorities supporting the conclusions reached upon general principles. Questions of law were considered in pages 323-333. * * *

"So far as questions of law are concerned, there is no occasion for any change in the prior discussion. * * *"

This language indicates that the proposed report was prepared on the theory that no occasion for any change in the views of the commission as to the general principles of law considered and discussed in the 1926 report exists, and shows that (1) it was written before the O'Fallon decision was announced, or that (2) in setting up again the investment basis for regulatory purposes the decision of the Supreme Court disapproving the same in the O'Fallon case was overlooked.

It appears in the proposed report also, in connection with a revision of finding (8) of the original order, that the information necessary to give effect to the revised finding (8), (56):

"is contained in the commission's basic valuation reports and the underlying reports and in completion reports and records of property changes required by Valuation Order No. 3, and any supplements thereto or revisions thereof.

"The effective date of the order herein should be contingent upon the time necessary to comply with Finding (8)."

It is further said (41):

"There will be reason for postponing the effective date of depreciation accounting in the case of all fixed property until the restatement of the investment accounts under Valuation Order No. 3 and its supplements has been completed."

The fact being, as thus stated, that the information necessary to carry into effect the proposed order will not be available for quite some time to come, no reason exists for not affording the opportunity to finally settle by judicial decree the important questions of principle involved, before any order in the premises is made effective. This reason is enhanced by the further fact that, in the valuations of their properties, the railroads have in their protests raised numerous issues of both law and fact, among them the issue as to proper 1914 reproduction costs which is proposed shall be used as a depreciation base, which issues have never been adjudicated by the courts because of the fact that the commission has not made a current valuation of any railroad under the valuation act, much less attempted to so use a current valuation as to afford the opportunity for its judicial review.

North American Develops Mechanical Refrigerator Car

Axle-driven ammonia system employs brine tanks with capacity for 72 hours' standing time—Company now equipping its cars

AN automatic mechanical refrigeration equipment has been developed after several years of extensive experiment and research work by the North American Car Corporation and will be applied as rapidly as practicable to the refrigerator cars owned by this company. The satisfactory results of service tests have indicated the desirability of equipping both old cars and new cars now on order, and this work will be done at the North American shops. These cars will no doubt first be used in restricted high-speed private-car service for which they possess particular advantages.

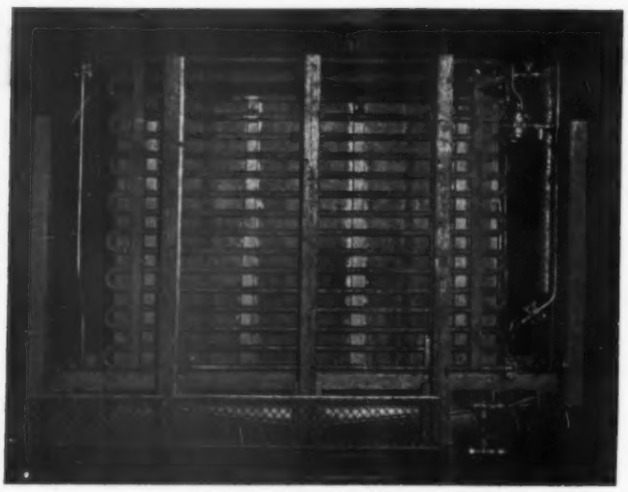
Advantages claimed for the new mechanically refrigerated car, known as the Frigicar, include a saving of approximately 3,000 lb. in weight over a standard refrigerator with full ice bunkers (the weight is the same as a brine tank car loaded with ice); elimination of all icing and re-icing en route; maintenance of any pre-determined constant temperature required for the best conditioning of perishable food products in transit; the attainment of this result without sacrifice of load-carrying capacity, since the cooling equipment in the car itself takes no more space than ordinary ice bunkers; and complete absence of salt and brine drippings ordinarily responsible for much damage to railroad equipment, steel bridges, rails and fastenings.

The saving in time of pre-cooling amounts to the difference between an average of 36 hours, formerly required with bunker ice and three to four hours required with the mechanical refrigeration equipment. In addition, one to two hours are saved at each re-icing station en route and the effect of this over-all decrease in operating time and switching expense will be to enable producers of highly perishable products in many parts of the country to reach markets not heretofore available. Moreover, the saving in time at loading stations and in transit will also permit a more intensive utilization of refrigerator equipment, a point of considerable present importance to car owners, whether railroad or private.

Power Obtained from a Truck Axle

In the new mechanical refrigerator car, primary power for refrigeration is obtained by mechanical drive from one of the truck axles. Other equipment includes an ammonia compressor and auxiliary electric motor, contained in a small steel box supported from the underframe; suitable cooling coils, brine tank, pressure-reducing valve and temperature control equipment lo-

Mechanically-Cooled Refrigerator Car—Ammonia-Compressor Unit in Small Metal Box Under the Car Frame



Bulkhead Removed to Show the Cooling Coils, Temperature-Control Equipment and Brine Tank in One End of the Car

cated in each end of the car in the space formerly occupied by the ice bunker or brine tank; and an ammonia gas condenser in the form of pipe coils on the car roof. This modern ammonia refrigerating system, which has been adapted to transportation needs, permits cooling refrigerator cars while in motion by a small amount of power taken from a truck axle, sufficient reserve cooling effect being stored in the brine tanks to provide refrigeration for periods up to 72 hours while the cars may be stopped for any reason. Pre-cooling at the shippers' plant is provided for by means of the supplementary motor which can be plugged into any available power line.

The Baker two-cylinder ammonia compressor with a capacity to produce three tons of ice in 24 hours, is driven from one of the truck axles through a flexible universal shaft in combination with sprockets and a roller chain. The universal shaft, supported on Timken roller bearings, is designed with a special spring arrangement in the sprocket providing two inches slack for the absorption of switching shocks. The split sprocket on the car axle is clamped in place without special machining of the axle, an important advantage in case wheel changes become necessary on account of the development of flat spots or other cause.

Secondary power for pre-cooling the cars is obtained from a 5-hp. electric motor which can be geared to the ammonia compressor by operation of the handle lever shown in one of the illustrations. The movement of this handle to throw the gears in mesh at the same time uncovers the electric plug connection which may be supplied from any available power line of 220 or 440 volts, a. c. or d. c. A fool-proof feature is incorporated in the design in that the cover of the compressor box cannot be re-applied and the car placed in operation until the hand lever has been moved to the upper position, thereby disconnecting the electric motor from the compressor and covering the plug connection.

The brine tanks, expansion-cooling coils and auxiliary equipment in either end of the car occupy the space formerly required for ice bunkers. Three cooling coils are provided, one inside, one at the front and one in the back of each brine tank. It will be observed that each coil is made, so far as possible, from one piece of pipe, without joints to minimize the possibility of leaks. Beneath the brine tank in one end of the car is an ammonia receiver with a capacity to hold 150 lb. of liquid ammonia. A pressure-reducing valve, a manifold and temperature-control equipment, shown in one of the illustrations, are located in each end of the car. The ammonia condenser, consisting of one-inch pipe, is located on both sides of the running board on the roof.

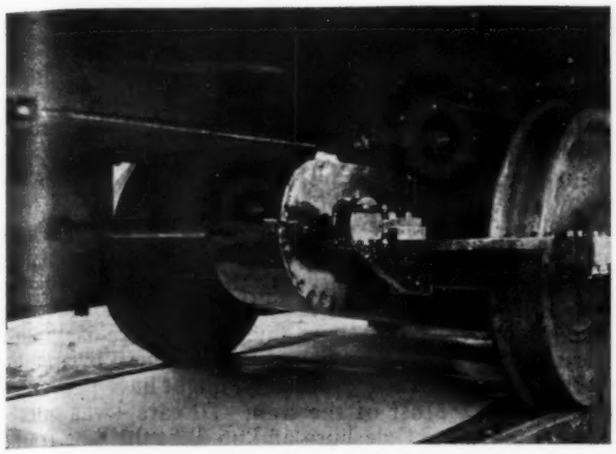
How the Refrigeration System Operates

After the entire piping system is charged with sufficient ammonia, mostly in a liquid state, the ammonia expands from a pressure of 60 lb. to 200 lb. per sq. in. through the pressure-reducing valve into the cooling coils at a pressure of 15 to 30 lb. per sq. in., depending upon how much of a refrigerating effect is required. From the coils surrounding and in each brine tank, the ammonia, in the form of a gas, passes into the ammonia compressor where it is compressed from low to the high pressure then being discharged to the condensing coils on the top of the car roof. As the gas passes through the condensing coils, it is cooled and condensed into a liquid state, finally being returned to the liquid receiver. The cycle repeated as long as the ammonia compressor is in operation. The ammonia takes the heat out of the car interior and carries it to the top of the car where it is radiated to the atmosphere.

If the compressor could be kept running all of the time, no brine tanks would be necessary, but as the train stops frequently and sometimes for long periods, the ammonia compressor is not always in operation. Furthermore, the train runs at variable speeds and an excessive amount of refrigeration is produced at certain times, while at other times not enough is produced. The two brine tanks are used to equalize this irregularity. In other words, when the train runs fast the excess refrigeration or capacity for heat absorption is stored up in the brine tanks and when the train stops or runs slow, the brine tanks continue the heat absorption process. In order to get the maximum refrigerating capacity stored in the tanks, a weak solution of brine is used which congeals at not too low a temperature.

A mechanical-type temperature control is provided. As the temperature in the car raises or lowers, the gas in the cooling coils raises or lowers the temperature of gas in a pressure-control manifold located in the upper part of each bulkhead. This opens or closes a valve which by control of the ammonia gas flow,

Compressor Unit Arranged for Motor Drive When Pre-cooling at Loading Stations



Primary Power Is Obtained by Mechanical Drive from One Pair of Truck Wheels

causes the compressor to produce refrigeration or to idle, depending upon whether the gas temperature in the car is to be lowered or maintained. An additional advantage of this arrangement is its simplicity and the absence of delicate instruments and equipment likely to get out of order due to vibration commonly experienced in road service.

Patents on the general arrangement and details of the Frigicar are held by Otto Luhr, consulting refrigeration engineer. Mechanical problems in connection with the design have been worked out under the direction of E. D. Brigham, Jr., superintendent of equipment of the North American Car Corporation.

Report on Collision at Portage

THE Interstate Commerce Commission desires to see the Pennsylvania Railroad proceed more rapidly than it is now doing in the installation of cab signals or automatic train control, on its more important lines. Reporting on the collision at Portage, Pa., 21 miles west of Altoona, on the night of October 9, when three employees were killed, the Commission says, speaking through the director of the Bureau of Safety, that—

"the density of traffic on this line is amply sufficient to warrant the installation of some system which will aid in the prevention of accidents due to the failure of enginemen either to observe or to obey signal indications; and this is particularly so where train movements are such that when an accident does occur there is the accompanying danger of involving other trains moving on adjacent tracks. It is recommended, therefore, that this railroad proceed as quickly as practicable with the installation of further safety devices, not only on this particular division, but on other portions of its main trunk lines where there is a very heavy traffic movement, and where no additional protection has yet been supplied in addition to that afforded by the automatic block-signal system."

The collision occurred at 11:07 p.m. Eastbound passenger train No. 4, moving at about 35 or 40 miles an hour, collided with a freight, headed west, which was backing across the eastbound track and had just been brought to a stop. The engineman and the fireman of the passenger train and the engineman of the freight train were killed; no other casualties reported. Both locomotives, one baggage car and six freight cars were badly damaged. The passenger train had run past distant and home signals set against it. The condition of the signals, the brakes and all other conditions were so free from fault that the conclusion of the inspector is that probably the engineman of the passenger train had become incapacitated, in some way, so that he was unable to take proper steps to bring his train to a stop after seeing the signals. Both engineman and fireman must have been awake at Wilmore, two miles back, as they took water from the trough at that place. It seems reasonable to suppose that the fireman was at work on the fire.

The engineman was 53 years of age, had been in the service 30 years and had been subjected to a satisfactory physical examination less than one month prior to the occurrence of this collision.

Referring to the collision on the Pennsylvania near Short Lane, Md., on January 17, last, (*Railway Age*, March 9, p. 572) after which the railroad company decided to install cab signals on the line between New York and Washington; and observing that at Portage an automatic train control system would probably have prevented the collision; and also that a visible and audible cab signal would possibly have prevented it, the report goes on to make the recommendation which was above quoted.

Accident Investigations, Month of March, 1929

W. P. BORLAND, director of the Bureau of Safety, Interstate Commerce Commission, has reported to the commission on 13 train accidents, occurring in the month of March, which have been investigated by the inspectors of the bureau; eight collisions and five derailments. Following are abstracts of these reports:

Collisions

Reading Company, St. Clair, Pa., March 2, 1:50 a. m.—A string of 33 freight cars standing in the yard on a steep grade were moved by gravity, the airbrakes having leaked off, and, after running about one mile, collided with a yard engine which, with two cabooses, was badly damaged. Two brakemen were killed and three other employees were injured. The cars, all loaded, had been placed on track no. 7 in the receiving yard within the six hours prior to the accident by four different crews. The cause is found to have been failure to set a sufficient number of hand brakes, and the inspector finds that the practice had grown up of taking for granted that the first draft of cars set in a case like this—called the "bumper"—had had a sufficient number of hand brakes set to provide safety for any additional cars which might be added to the string at the upper end; and the subsequent drafts, of seven cars and 12 cars had been placed against the "bumper" with only one hand brake set in each case.

New York Central and Rock Island, Chicago, March 2, 8:28 a. m.—Rear collision near the terminal station, Chicago, on the line which is operated jointly by the New York Central and the Chicago, Rock Island & Pacific; no casualties. Passenger train No. 150 of the New York Central, moving out from the station (southward) at about 8 to 12 miles an hour, ran into the

rear of a Rock Island train which had just backed out of the station and was at a standstill. Both locomotives were slightly damaged. No other damage reported. According to the report, the yard signals which should have governed this movement indicate red for stop and yellow for proceed under control and "the signals had no connection with the presence of a train and could have displayed low speed indications regardless of whether or not the track was occupied." The report places the blame on the fireman of the Rock Island train who, being at the rear of the train (its movement was southward) should have provided flag protection, and on the engineman of the New York Central train, for not running more slowly. Smoke interfered with a good view. The joint timetable which governs in this territory, requires a train, when stopped, to be protected but does not say how the protection shall be afforded. Rule 93 of the Rock Island requires protection by flag unless there is a plain view of 750 ft., but in case of collision, it holds the moving train or engine responsible. On the New York Central, Rule 93 requires protection against first-class trains within yard limits and places no responsibility on the approaching train. The situation as regards lack of a definition of "protection" should be remedied at once, says the report, instead of leaving the matter to the rules of the individual roads.

Pennsylvania, South Fork, Pa., March 5, 10:30 p. m. —Northbound freight train extra 6334, on the South Fork branch, entering South Fork yard, ran over a misplaced switch and collided with locomotive No. 4359, doing considerable damage. The fireman of the freight was killed. Responsibility is placed on the flagman, who should have stopped extra 6334. After remaining out for a short time, he started back in, of his own accord, without having been recalled, and not having placed torpedoes. He assumed that the main track was clear because he saw green indications in all of the switch lamps that were within his view, but it appears that one lamp was dim or dead. There was, however, no excuse for assuming a clear track, when he had not been called in. A nine-page report gives extended details of careless work, forgetfulness and lack of proper understanding of rules.

A Study for the Psychologist

Chicago, Rock Island & Pacific, Freeburg, Mo., March 7, 12:31 a. m.—Eastbound freight train No. 96 ran past Freeburg station, where it should have waited until 12:40 for a westbound extra freight, and collided with the westbound train while moving at moderate speed; four employees were injured. The engineman of No. 96 remembered his order and gave the proper whistle signals approaching Freeburg, but he had got it into his head that the time limit at that point was 12:30 instead of 12:40. In the seven miles that he ran after receiving the order he became confused, thinking of "12:30," named for a wait at another station, beyond, and the number "30" occurring in several other connections, and he made the wrong assumption which caused the collision. There was no abnormal condition, says the report, to distract his mind or the minds of the fireman and the front end brakeman, who are held equally responsible with the engineman. The conductor and the flagman are not held responsible as they were apparently alert approaching Freeburg. The conductor said that he applied the brakes though other members of the crew maintained that the brakes were not applied from the rear of the train. The inspector thinks it may have been possible that the brakes were applied at the same moment by both the engineman and the conductor.

Chicago, Burlington & Quincy, Rome, Iowa, March 16, 12:22 a. m.—Eastbound passenger train No. 2 which had been stopped unexpectedly and had been standing about eight minutes, was run into at the rear by an eastbound freight, moving at about 5 to 8 miles an hour; and the rear car of the standing train was telescoped for a distance of about 8 ft. Five passengers and two Pullman employees were injured. The inspector puts the responsibility on the engineman of the freight, who claimed that the airbrakes did not seem to hold properly. The report finds that there is "much merit in this contention" yet the engineman, by manipulating the brake valve differently, might have prevented the collision. Most of the train—70 cars—was subsequently moved to Galesburg and no difficulty was found in controlling the speed. The testing of the brakes at Ottumwa, where the train was made up, was carelessly made and the report calls upon the road promptly to correct inefficiency in connection with airbrake tests.

Outside Expert Called In

Missouri Pacific, Barton Crossing, Ark., March 18, 3:10 p. m.—Southbound freight train extra 1255, which should have waited for northbound passenger train No. 334, ran past the station and collided with the passenger train, which came on at about 20 or 30 miles an hour. The engineman of the passenger train was killed and 11 passengers and four employees were injured. Train 334 leaves this line (which is in the Latour district) at Barton Crossing and is diverted into the Clarendon district, and a southbound freight, as in this case, must get its right against the passenger, at Barton Crossing, by reference to the train register, which is in a passenger shelter, unattended. The conductor of the freight either misunderstood the train register or the register had an erroneous entry. Trains on the Clarendon district are recorded on the same register. Train No. 834 had just arrived on that line, and the inspector accepts the statement that Conductor Waddell, of that train, had correctly entered his train on the register as No. 834, but it appears that the record had been altered to read 334. The present report, filling 10 pages, recounts the efforts of the inspector to discover whether or not the conductor of the freight had misread the report and afterwards had changed the pencil entries on the register in order to cover up his mistake. Testimony is introduced from a woman residing at Barton Crossing, who saw an excited man handling the train register, and from a handwriting expert; the latter believes that Conductor Wood of the freight had made the changes in the record. The rules provide that enginemen must check train registers, when practicable; or if they do not do this, they must require from the conductor a register check, but in this case the engineman did not comply with this rule. The only general recommendation of the report is that employees should obey strictly the rules governing their own actions instead of depending on others to perform their duties properly. The engine crew of the freight were unfamiliar with this territory.

Clinchfield, Thermal, N. C., March 24, 1:40 a. m.—Northbound freight train No. 95, moving at about 30 miles an hour, ran over a misplaced switch and collided with southbound freight No. 26, standing on the side track; badly damaging the locomotives and several cars; three employees were injured. The switch had been intentionally set for the side track by an absent-minded brakeman of No. 26. As soon as his train stopped he

went forward to a telephone booth near the switch, called the dispatcher (as is required when a train to be met does not arrive) and then, about ten minutes later, he unlocked the switch, set it for the side track and sat down to smoke. When train No. 95 came into view he gave it a proceed signal. This brakeman said that he did not realize that there was anything wrong until about the time the engine of No. 95 passed him and the air brakes were applied in emergency. He attributed his mistake to the fact that usually on trips like this the southbound train holds the main track, and after telephoning the dispatcher it is customary to open the switch. In this instance, when he left the engine he had not come to the realization that his train was on the passing track and the only thought in his mind was to call up the dispatcher and open the switch, which he did; and at the time he gave the proceed signals to train No. 95 as it approached he was fully aware that the switch was open and that that train would enter the passing track. This road has a manual block signal system but there are no operators on duty at night. The switches are not lighted. The switch target, about 16 ft. high, shows a white disk 36 in. in diameter when the switch is set straight for the main line and a red arrow 50 in. long when set for the side track. The inspector holds that if there had been a switch light the collision probably would not have occurred, but attention is called to the fact that the line of this road is very crooked and at most of the passing tracks the view of a switch target is very limited.

How Many Men at Fault?

New York, Chicago & St. Louis, Edwardsville, Ill., March 26.—Eastbound freight train No. 44, with 36 cars, passed Edwardsville at 5:48 p. m. where it should have waited until 5:50; and about one-quarter mile beyond the station collided with a westbound extra, 36 cars, both trains approaching the point of collision at about 35 miles an hour. Both locomotives and 12 cars were wrecked; the three men on the locomotive of No. 44 were killed and the engineman and fireman of the other train were injured. The immediate cause of the collision was failure to deliver the wait order to No. 44. The report places the blame primarily on the westbound train, which had violated the rule requiring it to clear No. 44 five minutes. In the attempt to clear it by one or two minutes, excessive speed had been made. This train was designated as a "traffic extra," a class which is favored by the dispatchers and this fact is taken to be one of the influences which led the conductor and engineman to stretch the rule. The operator at Edwardsville had been out of the office at the time the train order came and it was taken by the agent, who told the operator that the dispatcher wanted to be advised of the approach of No. 44, so that, if possible, he could annul the order in time to avoid stopping the train. Soon after this, or about 5:35 p. m., the agent left the office for his home; and the red flag which should have been displayed in addition to the train order signal was not put out. The operator endeavored to communicate with the dispatcher but was unable to do so, and cleared the train order signal just before the train reached the station, taking this action, he said, because of the instructions conveyed to him by the station agent. This agent had not copied more than 20 orders within the past two years; and he failed to note that the order was an improper one. It should have stated in the body of the message that it was being delivered to No. 44 at the point where it was to be acted on. Moreover, the train order signal was 1200 ft. east of the switch where the westbound train would have to enter the siding. The dispatcher is criticised for the way that he handled the train order. The men in charge of the extra did not know that No. 44 was to get the order at the waiting point. The engineman of the extra said that it was a somewhat general practice to use some of the five minutes clearance time in approaching meeting points; and, says the report, immediate steps should be taken for the discontinuance of this practice. On this line there is an average of 23 trains daily and it is believed, says the report, that the road should give immediate consideration to the question of providing a block signal system.

Derailments

Atchison, Topeka & Santa Fe., Sibley, Mo., March 2.—A westbound freight train consisting of 122 cars and a caboose, hauled by engine 4101, broke in two between the locomotive and the first car, while moving at 12 or 15 miles an hour; and the shock, caused by the slack running in, caused the 103rd car in the train to break in two and run off the track. Eight other cars were damaged. Two employes were injured. The defective coupler which caused this derailment was found broken in two places. The horn was broken so as to permit the lock block to drop down directly in the path of the back end of the knuckle, and when an attempt was made to couple to the car, the block was driven back into the shank, breaking off the stop. This weakened the coupling so that the knuckle was pulled past the block. The broken surface of the knuckle could have been readily seen at Henrietta, a car repair point, where this car had stood about 22 hours. After the accident, the removable parts of the coupler were taken out and others substituted; but the coupler body was left in and the car was moved to its destination. This movement is characterized as a menace to the safety of trains, as the more serious defect was concealed; the car should not have been returned to service until it had been inspected by a competent inspector.

Great Northern, Singleshot, Mont., March 4.—Westbound mail train No. 27, consisting of nine baggage and mail cars, hauled by locomotive No. 2502, had been stopped because of snow slides, and had started ahead moving about 15 miles an hour when it was struck by a snowslide at the west end of snowshed No. 6; several cars were knocked off the track. One mail clerk and two employees were killed and three mail clerks and two employees were injured. The report says that elaborate precautions had been taken to prevent damage by snowslides; but, in view of the frequent occurrence of slides at the west end of snowshed No. 6, it is recommended that a snowshed be built to connect sheds No. 5 and No. 6 and that an addition of 400 ft. be made at the west end of shed No. 6.

Atlanta, Birmingham & Coast, Chalybeate Springs, Ga., March 15, 6:05 a. m.—Northbound passenger train No. 4, first section, moving about 20 miles an hour, was derailed by a portion of the roadbed, softened by rain, sliding out under the locomotive. The fireman was killed and four passengers, three mail clerks, one express messenger and six employees were injured. The landslide occurred in a fill in a ravine on a mountain side, at a point where the road was built in 1906. An area of five acres was drained through a cast iron pipe 30 in. in diameter, through the fill, and no trouble had occurred at this point prior to this time. A section about 110 ft. long slid out. Heavy rains had prevailed

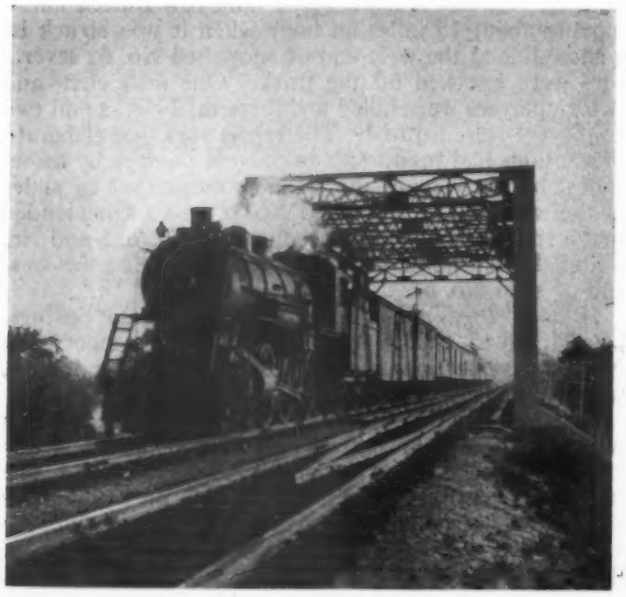
for three weeks. A trackwalker had been over the ground at 5 o'clock on the preceding afternoon and a locomotive had passed this point about three hours previous to the arrival of train No. 4.

Elgin, Joliet & Eastern, Chicago, March 23.—A freight train moving slowly in the yard was derailed at a double slip switch and the locomotive was overturned. The fireman was killed and the engineman injured. The cause is given as a defective turnbuckle on the connecting rod of a movable point switch. The connecting rod had been stripped because of rusty threads, which apparently were caused by ashes and dirt dropping down from trains. The defective turnbuckle permitted the frog point to open part way. The report says nothing about the responsibility for this, except to say that the track is inspected daily and there is someone on duty at all times to look after the switches. The introductory paragraph of the report says that the track is well maintained.

Boston & Maine, North Charlestown, N. H., March 28, 4:47 a. m.—Southbound passenger train No. 78, travelling at about 45 miles an hour, was derailed while moving over a fill about 50 ft. high, and part of the cars fell down the bank; 22 persons were injured. The cause of this accident was not definitely ascertained. A brakeshoe and one other piece of metal were found on the track, but could not be connected with any circumstance likely to cause derailment, nor was the track in bad condition; although the inspector believes it possible that the cause was variations in elevation in combination with the absence of tender side-bearing blocks on one truck.

A THROUGH TRAIN, running once every two weeks, from Cape Town to Port Francqui (Ilebo) in the Belgian Congo is the latest improvement in service to be inaugurated through cooperation on the part of the various African railway systems. As the distance from the south coast to the heart of Africa is some 3,300 miles, the new run assumes transcontinental proportions. Direct access to the west coast at Matadi is also available from Port Francqui, which is located on the navigable Kasai river.

* * *



A Worcester-Nashua Local Passenger Train at Still River, Mass., on the Portland Division of the Boston & Maine

Looking Backward

Fifty Years Ago

Of the 92,671 tons of American-rolled steel rails laid on the Pennsylvania since 1868, only 6.26 per cent have been removed because of failure. If those rolled in 1871, the year in which a scarcity of pig iron and a desire on the part of the Bessemer works to fill all the railway needs prevented a careful selection of pig iron for rail, are excepted, the percent removed is only 4.09, with an average life of all rail removed of 5.07 years.—*Railroad Gazette,* November 14, 1879.

The reports of the New York Produce Exchange for the 10 months ending November 1 show an immense gain in grain receipts and shipments at the eight Northwestern markets—St. Louis, Peoria, Chicago, Milwaukee, Duluth, Detroit, Toledo and Cleveland. Northwestern receipts and shipments in 1879 each represented a gain of 44 per cent over those of 1877. Shipments by canal have not increased proportionately this year and the added traffic has accrued to the railways. More than one road in the Northwest reports a lack of cars to handle the wheat crop.—*Railroad Gazette,* November 14, 1879.

Twenty-Five Years Ago

The National Association of Railroad Commissioners, at its sixteenth annual convention at Birmngham on November 16, received a committee report which proposes the enactment of a federal law requiring every railroad to adopt the block signal system on one-fourth of its passenger lines.—*Railway Age,* November 18, 1904.

The recent disastrous floods in the Southwest, mainly on the Canadian, Las Animas and Rio Grande rivers, have caused damage to railway property of more than $2,000,000. The Atchison, Topeka & Santa Fe lost its passenger station at Trinidad, Colo., while that road, the Chicago, Rock Island & Pacific, the St. Louis-San Francisco and the Fort Worth and Denver City suffered considerable damage to bridges, trestles and roadbed.— *Railway Age,* November 18, 1904.

The Master Mechanics' Association has appointed a committee to consider the average hours locomotives are in service and what portion of the year they are in the shop for repairs. With the increased cost of motive power it becomes more important to obtain a full service from them. Many locomotives built this year cost $20,000 or more, and the interest on this sum amounts to about $3 per day, a small item when compared with the earning value of the engine when in serviceable condition.—*Railway Age,* November 18, 1904.

Ten Years Ago

The House of Representatives Committee completed its work on the revised Esch railroad bill on November 8 and it was introduced in the House on the same day by Congressman John Esch of Wisconsin. The new Cummins bill was previously reported to the Senate on October 23.—*Railway Age,* November 19, 1919.

After lasting for 11 days, the strike of miners and mine workers in the bituminous coal fields encountered the full force of the law on November 8, when a judge of the federal district court at Indianapolis issued a mandatory injunction enjoining the union leaders from permitting the strike order to remain in effect, and commanding them to issue a withdrawal of the order by November 11. Comparatively few miners returned to work on that date. Walker D. Hines, director general of railroads, took over a large number of the functions formerly exercised by the fuel administrator and issued instructions for the withdrawal of open-top cars from non-coal service. This and other instructions resulted in a coal production for the week ending October 25, of 13,118,000 net tons, the highest week's record in 1919.—*Railway Age,* November 19, 1919.

Communications and Books

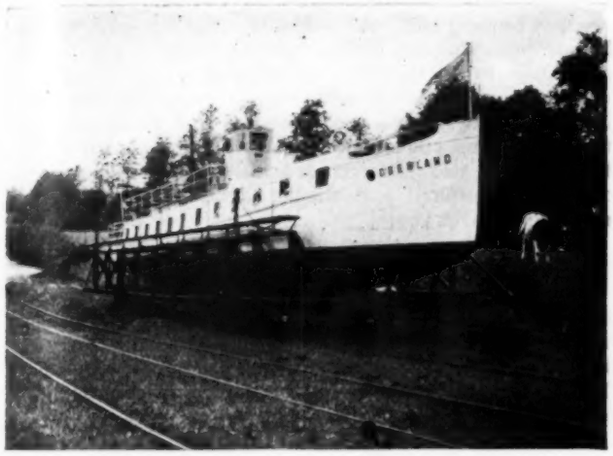
A Portage Railroad in Germany

HANOVER, GERMANY.

TO THE EDITOR:

In connection with the account, in your issue of October 5, telling of the dedication of a monument to the old Portage Railroad, in the state of Pennsylvania, your readers may be interested in the fact that such a railroad is still in existence in Eastern Prussia. It is on the line of the Oberlaendische Kanal, connecting Elbing and an inland sea which is 340 ft. above sea level.

On this line there are seven inclined planes, and the propelling power consists of turbines, each of which takes its water from the next upper level. This canal is some 75



years old and is not so wide as some of later construction, but it is traversed by boats large enough to carry 200 persons. The gage of the tracks on which the boats are hauled up is 10 ft. 6.375 in. On the upward trip the boats carry coal, oil and fertilizer, and on the downward trips they are loaded with agricultural products and wood.

E. METZELTIN.

New Book

Railways of Today, by Cecil J. Allen. Illustrated. 400 pages, 6¼ in. by 4½ in. Bound in cloth. Published by Frederick Warne & Company, Ltd., London and New York. Price $5.

This work is an attractive handbook of railway practice throughout the world. In pursuing this comprehensive plan, however, the author usually turns to the activities of British railways for specific examples of equipment, practices and principles under discussion.

A large proportion of the book is devoted to the engineering aspects. It is conveniently divided into four sections headed as follows: The Track, The Motive Power, The Trains, and Railway Operation. The initial chapter under the track section is an historical survey of a century of railway development. From this the author proceeds to discuss in turn the principles of route planning, the choice of gage and the engineering and operating aspects of bridging and tunnelling. A final chapter under this section considers the roadbed. In the motive power section the various types of locomotives and their working are described in detail and conveniently diagramed. A chapter is also devoted to electric traction. Freight and passenger services are next reviewed with separate discussions of the various grades of the latter. The final section considers timetables, stations, signaling, administration and other railway activities such as water transport and other off-track services.

A special feature of the book is the inclusion of color reproductions among the illustrations. The claim is made in the introduction that these color reproductions are used "on a scale not previously attempted in any railway book." There are 36 of them. Two hundred photographic reproductions, 25 diagrams and a complete sectional chart of a modern locomotive bring the total illustrations to 262. Furthermore a convenient series of appendices lists, in tabular form, the highest altitudes of British railways, the world's highest railway summits, the longest railway tunnels in the world, locomotive wheel arrangements, leading dimensions of principal British locomotive types and the longest non-stop train runs and the fastest daily runs in Great Britain and France.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

A Bibliography for Debaters. A list of recent government publications (with prices) classified under frequently used subjects for debate and issued as Price List 74. 93 p. Pub. by U. S. Govt. Print. Off., Washington, D. C. *Apply.*

Canadian Observations, by E. W. Beatty. An address before Investment Bankers Association of America pointing out important factors in Canadian development. 12 p. Publisher not given but probably available from Canadian Pacific Railway, Montreal, Canada.

Electrification of Steam Railroads Committee 1928-1929 Serial Report. "Recent progress of electrification" p. 2-18. "Report of subcommittee on electrification in Europe" p. 18-64. Illustrated. Publication No. 289-118. 77 p. Pub. by National Electric Light Association, New York City. $1.15; to members 75 cents.

Federal Regulation of Railroad Construction and Abandonment under the Transportation Act of 1920, by Frank T. Hypps. A study made at the University of Pennsylvania tracing the historical background of certificates of public convenience and necessity and discussing the provisions of the Transportation Act 1920 as administered by the Interstate Commerce Commission. 82 p. Pub. by Author, Philadelphia, Penna.

Forty Years With General Electric, by John T. Broderick. "Measuring Men" (Chapter 25) and the chapters on Steinmetz, Thomson and Langmuir and "Integrity of Costs" may be of especial interest. 218 p. Pub. by Fort Orange Press, Albany, N. Y., $2.50.

Minnesota Freight Rate Structure, by Wayne E. Butterbaugh. "This preliminary study heralds something to follow in the way of a more elaborate and inclusive study of transportation in the Central Northwest area." Foreword. 40 p. Pub. by University of Minnesota Press, Minneapolis, Minn. 50 cents.

Periodical Articles

Agriculture Forging Ahead, by Arthur P. Chew. "All the principal indexes of agricultural trend record improvement." Barron's, November 11, 1929, p. 3, 8.

Experiences With Co-operation Between Labor and Management in the Railway Industry, by Otto S. Beyer. Discusses Baltimore and Ohio and Canadian National plans. (In Wertheim Lectures on Industrial Relations 1928, p. 3-31. Cambridge, Mass., Harvard Univ. Press, 1929.)

The Police and the Crime Problem, edited by Thorstein Sellin. A collection of articles discussing specific problems relating to modern police and police methods grouped under "The Organization and the Functions of the Police," "Problems of Police Personnel" and "The Tools and Technique of Criminal Investigation." (Pennsylvania) "Railroad Police" p. 57. Annals of the American Academy of Political and Social Science, November 1929.

Odds and Ends of Railroading

Our idea of a difficult position would be that of a conductor on that Manchuria railroad listening to contradictory orders from a Chinese and a Bolshevik boss.—Macon Telegraph.

Athletes

The Southern Pacific enters two of its family as deserving of athletic fame. One is Lyn Lary, regular shortstop on the New York Yankees, who is the son of the agent at Visalia, Cal., the other is C. F. Meeker, timekeeper in the superintendent's office at Dunsmuir, Cal., who has been breaking records right and left in the field of long distance swimming.

Just a Lesson

The express had not been living up to its reputation. First it would go forward fifty yards or so, then back, then stand still, puffing uncertainly, and then begin the same things all over again. At last one of the travelers called the British guard.

"What's the matter with this train?" he demanded. "Backing up and jerking forward in this way."

"It's quite all right, sir," the guard assured him. "I think the engine driver is teaching his wife to drive."—Exchange.

A Unique Distinction

The Texas & Pacific is believed to be the only railway in this country now operating under a charter granted by a special Act of Congress. On March 3, 1871, Congress incorporated the line, with the following statement: "The Texas Pacific Railroad Company shall be and is hereby declared to be a military and post road; and for the purpose of insuring the carrying of mails, troops, munitions of war, supplies, and stores of the United States, no act of the company, nor any law of any state or territory shall impede, delay or prevent the said company from performing its obligations to the United States in that regard"

Swelling the Conscience Fund

Life isn't always just timetables and train orders and engines and machine shops on a railroad. Sometimes a bit of real human interest creeps in. Recently, it came in the form of a letter addressed to H. E. Newcomet, vice-president of the Pennsylvania in Chicago, and it told the story of a 19-year old debt that at last was being paid. The letter was from J. M. Nuzum of Claysville, Pa., and enclosed a check for $23 in payment for a ride stolen in 1910.

"I beat my carfare from Chicago to Philadelphia in the year of 1910," the letter said. "Now I have been saved and I am going back over my life straightening up all my wrongs."

The check will be deposited in the Pennsylvania's "conscience fund," which frequently receives contributions, most of which are sent by unknown persons who wish to make payment for an uncollected ticket or for a stolen ride.

The Deluge

When the Mississippi was raging and roaring in 1927, many peculiar things happened, principally tragic, but occasionally there was a comic interlude. One such occurred when the levees in a certain section gave every indication of giving way. Since the area was already surrounded by water on all sides, any additional flooding would practically ruin it, and the natives were working manfully to stem the river. As it happened, a railway had just completed the construction of a bridge approach before the flood came along. An officer of the line had come down to see how the work was progressing, and while there the flood caught him and his car and marooned him. Of course, the nice new earth of the bridge approach was conspicuous and the workers on the levee made a bee-line for it. Some 300 of them swarmed over it, shoveling the earth into sacks to be used as sandbags along the levee. The railway officer stood disconsolately by and watched the performance. Suddenly, one of the natives recognized him.

"Hey," he yelled, "you-all going to get into trouble, sacking up this man's railroad."

"Brother," said the officer fervently, "if they'll show me a way out of here, they can have my railroad, and welcome."

Most Traveled Railroader

James M. Manning, machinist for the Norfolk & Western at Bluefield W. Va., claims a record of some sort for traveling. He has visited every state in the Union and many foreign countries. His jaunts through foreign climes, including Mexico, Canada, all of the Central American countries, South America, England, Scotland, Germany, Africa and Italy, and brought him into touch with many foreign languages. He can speak English, Polish, German, Spanish and French. In addition to all this, Mr. Manning is a stamp collector. Seven large volumes of these stamps, which include many different varieties, have been mounted and these constitute only half of his collection. In 22 volumes of scrapbooks, Mr. Manning also has recorded all the interesting events that have transpired and all the sights that he has witnessed since early youth.

Another Early Postal Car

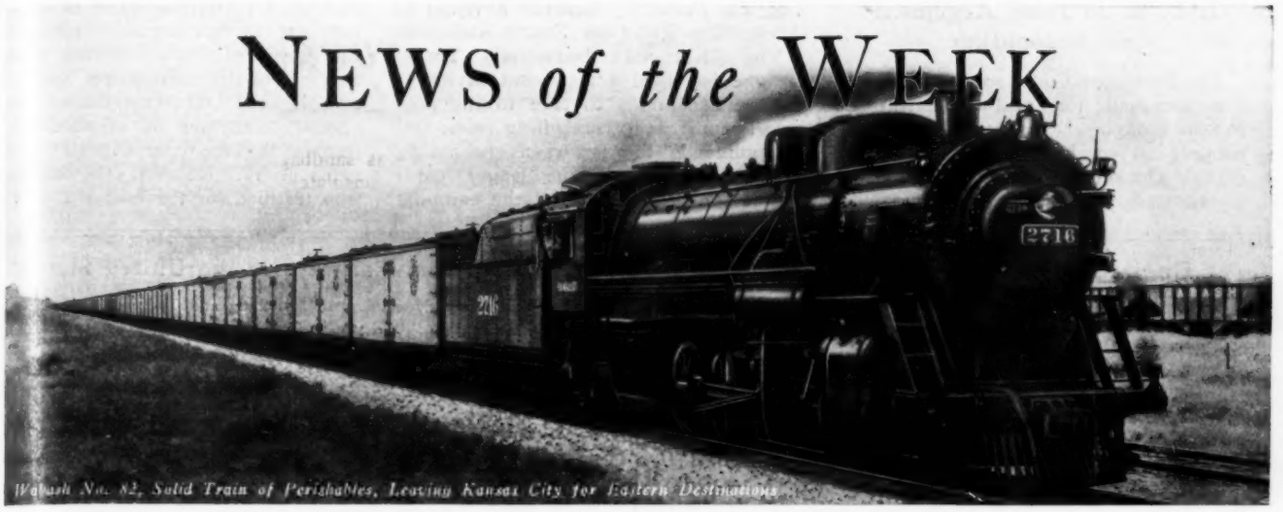
The recent celebration of the operation of the first railway mail car on the Hannibal & St. Joseph brings to mind the fact that there is attached to the train concourse wall of the Chicago & North Western passenger terminal at Chicago a bronze tablet with the following inscription underneath a reproduction of a mail car:

GEORGE B. ARMSTRONG
Founder of the
United States
Railway Mail Service
Put his First Railway Postal Car
in use on the
Chicago and North Western
Railway Between Chicago, Ill.
and Clinton, Iowa,
August 28th, 1864,
Under Authority From
Postmaster Gen. Montgomery Blair
Dated July 1st, 1864.

A B. & O. Dynasty

Charles W. Galloway, for the past nine years vice-president in charge of operation and maintenance for the Baltimore & Ohio, recently completed his forty-sixth year of service with that line, but that is not his only claim to fame. Mr. Galloway represents the third generation to serve the Baltimore & Ohio continuously since its inception in 1827. In 1830 his grandfather, William Galloway, drove the first horse car, which ran from Mount Clare Station, Baltimore, to Ellicott's Mills (now Ellicott City, Md.), and when the iron horse of fire and steam supplanted old Dobbin on the pioneer railroad, he became a locomotive engineer, following this vocation for 50 years. Among the first engines given to his charge was the gaily colored "Lafayette" of 1837, first horizontal-boiler locomotive of the Baltimore & Ohio, which was renamed the "William Galloway" in his honor during the Fair of the Iron Horse in 1927. Vice-President Galloway's father, Charles Barton Galloway, also became an engineer, and at his death the son ran true to family tradition, beginning his railroad career August 23, 1883, at the age of 14, as a messenger boy in the telegraph office.

NEWS *of the* WEEK



Wabash No. 82, Solid Train of Perishables, Leaving Kansas City for Eastern Destinations

THE WESTERN RAILWAY CLUB will hold its regular meeting at Hotel Sherman, Chicago, on Monday evening, November 18. Dr. W. M. Barr, consulting chemist of the Union Pacific, will speak on alloy steel and heat treatment.

THE RAILWAY CLUB OF PITTSBURGH will hold its next meeting on Tuesday evening, November 26, at Fort Pitt Hotel, Pittsburgh, Pa. Dr. John G. Bowman, chancellor of the University of Pittsburgh, will speak on "What is a great job." The meeting will be preceded by a dinner at six o'clock.

THE ATTORNEY-GENERAL OF TEXAS, R. L. Bobbitt, has ruled that the Texas full-crew law applies to rail motor cars and motor trains operated by railroads, as well as trains propelled by a steam locomotive. The Texas law provides that every train operating outside of yard limits must be manned by an engineman, a fireman, a conductor and a brakeman.

FIVE HUNDRED employees of the Toledo, Peoria & Western, members of the conductors', firemen's, trainmen's, operators' and maintenance of way unions, went out on strike on November 13 following failure of federal mediation to bring about a settlement of difficulties between the management and shop employees over a refusal to recognize or deal with various shop crafts, organizations affiliated with the American Federation of Labor.

HENRY G. SMITH, receiver of the Bristol Railroad, six miles long from Bristol, Vt., to New Haven Junction where it connects with the Rutland, has petitioned the Public Service Commission of Vermont for authority to discontinue operation of the road. Competition of motor transportation on the highways has made the operation of the railroad unprofitable. The present timetable of this road, dated September 29, as given in the Official Guide, shows three trains each way each week day.

A TWO-ALARM FIRE of undetermined origin completely destroyed the ice house of the Canadian National in the East End yards at Toronto, Ontario, on the night of November 5. Although the building, a 600 ft. by 150 ft structure, was practically empty, the loss is estimated by railroad officers at $70,000. Quick action on the part of a switching crew which hauled a number of freight cars away from the vicinity of the blaze prevented any damage to rolling stock.

A JURY in the St. Louis circuit court on October 29 awarded Henry L. Martin, an engineman of Memphis, Tenn., a judgment for $59,825 in his suit against the St. Louis-San Francisco for injuries in an accident in 1925. Martin, who lost a hand and sustained injuries to both legs, charged that faulty air brakes caused the mishap, which occurred between Memphis and Amory, Miss. The original suit was for $100,000. A judgment for 30,000 was obtained in 1926 but the award was reversed by the Missouri supreme court and remanded for a new trial.

THE PONCE DE LEON EXPRESS, northbound, of the Southern Railway, was derailed at Glen Mary, Tenn., on the morning of November 11, about one o'clock, and the locomotive and several cars fell down a bank. The whole train of 13 cars went off the rails. The engineman, fireman and one mail clerk, were killed; one passenger was killed and another probably fatally injured, and 50 or more were less seriously hurt. No information is given as to the cause, except that it is conjectured that some part of a truck had been detached and caused derailment of a following car.

C. G. W. Directors Meetings To Be Held in Various Cities

The directors of the Chicago Great Western Railroad will depart from the custom of holding all meetings in Chicago.

"Our directorate has decided that the best interests of the railroad will be served if they can establish close contact with the problems of the territory which the Great Western serves," said President Boatner, "and it is the intention of the board to obtain first hand information whenever possible."

The new plan was instituted on November 4, when the directors held their regular meeting in Omaha. Mr. Boatner indicated that whenever possible in the future the board of directors will congregate in other important centers on the Great Western's lines and confer with business men of the section on the particular traffic problems of the territory.

A Freight Conductor's Record

F. L. Whitcomb, a conductor of the Central Vermont, running through freight trains over a division 130 miles long, worked during the month of October, 23 days, covering 3007 miles. His averages during this time were: cars per train, 103; tonnage per train, 3,064; ton-miles per train hour, 49,000; hours per day 7- 1/3; speed per hour, including stops, 15.65 miles.

Conductor Whitcomb estimates that during this month his duties required him to walk 60 miles, or an average of 2.6 miles a day.

Motor Transport Division Meets

With an attendance of 63 delegates, representing 67 railways, the second annual meeting of the Motor Transport Division, American Railway Association opened in the Royal York Hotel, Toronto, Ont., last Tuesday, November 12. The first day was devoted to the reports of the general committee, the law committee, the nominating committee and the Motor Truck Section. A resolution offered by the nominating committee to the effect that the present officers be reelected for a period of two years was unanimously adopted.

On the second day of the meeting a joint session with the Society of Automotive Engineers, Transportation Section, was held. This was followed on the third day by a closed meeting of the Motor Transport division at which the reports of the Rail Motor Car Section were heard and discussed.

On the fourth day the Motor Coach Section presented its reports and studies. Delegates to the Motor Transport Division meeting on Thursday evening attended the transportation dinner of the Society of Automotive Engineers. Additional registrations as the meeting progressed brought the total registration up to a considerably higher figure than that of the first day.

I. C. C. to Hear Arguments on Accounting

The Interstate Commerce Commission has assigned for oral argument at Washington on December 5 and 6 the proposed report by Commissioner Eastman in Docket No. 15,100, Depreciation Charges of Steam Railroad Companies, and *Ex Parte 91*, General Revision of Accounting Rules for Steam Railroads.

The National Industrial Traffic League has filed a statement saying it has no exceptions to take to the proposed report as to accounting rules, and it commends the report as proposing sound conclusions. The league commends the conclusion that the commission should find that there is clear warrant for further intensive research into the subject of cost accounting, under the auspices of the commission, and heartily accepts the recommendation that a special committee be selected for the purpose by the commission. It nominates J. W. Roberts, the accountant who testified for the league at the hear-

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 180 Steam Railways, Including 16 Switching and Terminal Companies

FOR THE MONTH OF SEPTEMBER, 1929 AND 1928

Item	United States		Eastern District		Southern District		Western District	
	1929	1928	1929	1928	1929	1928	1929	1928
Average number of miles operated	241,692.38	241,436.73	60,103.26	60,104.60	45,763.62	45,774.91	135,825.50	135,557.22
Revenues:								
Freight	$434,971,606	$424,091,565	$184,425,333	$174,995,425	$72,980,599	$68,711,712	$177,565,674	$180,384,428
Passenger	a 75,735,988	b 80,200,491	41,963,774	43,533,879	8,979,758	10,329,443	24,792,456	26,337,169
Mail	c 11,253,502	9,019,094	4,819,511	3,533,042	1,780,264	1,478,770	4,653,727	4,007,282
Express	13,194,355	12,770,842	6,512,973	6,002,482	1,700,748	1,791,100	4,980,634	4,977,260
All other transportat'n	18,451,724	18,221,583	10,848,775	10,332,656	1,247,201	1,275,353	6,355,748	6,613,574
Incidental	12,090,654	11,796,915	5,886,145	5,634,887	1,226,891	1,260,375	4,977,618	4,901,653
Joint facility—Cr.	1,349,321	1,082,720	532,504	331,679	209,511	175,116	607,306	575,925
Joint facility—Dr.	327,593	267,372	82,559	25,943	37,633	46,493	207,401	194,936
Railway operating revenues	566,719,557	556,915,838	254,906,456	244,338,107	88,087,339	84,975,376	223,725,762	227,602,355
Expenses:								
Maintenance of way and structures	77,509,244	74,975,150	33,433,409	31,863,777	12,537,787	12,414,503	31,538,048	30,696,870
Maintenance of equipment	99,943,821	95,803,961	47,653,902	44,747,614	17,244,974	16,458,484	35,044,945	34,597,863
Traffic	10,628,537	10,193,007	4,142,461	3,891,609	1,925,640	1,897,485	4,560,436	4,403,913
Transportation	175,314,816	175,904,677	83,115,748	81,125,257	26,081,105	26,758,536	66,117,963	68,020,884
Miscellaneous operat'ns	5,071,849	4,874,613	2,382,418	2,185,930	465,319	471,645	2,224,112	2,217,038
General	16,165,506	15,938,036	7,106,220	7,008,368	2,711,189	2,630,780	6,348,097	6,298,888
Transportation for investment—Cr.	1,284,637	1,448,397	328,174	276,728	125,482	90,091	830,981	1,081,578
Railway operating expenses	383,349,136	376,241,047	177,505,984	170,545,827	60,840,532	60,541,342	145,002,620	145,153,878
Net revenue from railway operations	183,370,421	180,674,791	77,400,472	73,792,280	27,246,807	24,434,034	78,723,142	82,448,477
Railway tax accruals	38,635,478	35,786,607	16,724,765	15,492,971	6,522,384	6,015,519	15,388,329	14,278,117
Uncollectible ry. revs.	99,977	100,106	42,245	44,454	22,904	23,318	34,828	32,334
Railway operating income	144,634,966	144,788,078	60,633,462	58,254,855	20,701,519	18,395,197	63,299,985	68,138,026
Equipment rents—Dr. balance	8,452,180	8,219,861	3,454,402	3,439,972	d 971,442	d 888,903	5,969,220	5,668,792
Joint facility rent—Dr. balance	2,284,771	2,076,896	1,171,672	1,010,913	208,058	193,144	905,041	872,839
Net railway operating income	133,898,015	134,491,321	56,007,388	53,803,970	21,464,903	19,090,956	56,425,724	61,596,395
Ratio of expenses to revenues (per cent)	67.64	67.56	69.64	69.80	69.07	71.25	64.81	63.78

FOR NINE MONTHS ENDED WITH SEPTEMBER, 1929 AND 1928

Average number of miles operated	241,544.65	240,956.34	60,125.18	60,092.11	45,763.58	45,710.05	135,655.89	135,154.18
Revenues:								
Freight	$3,617,466,185	$3,421,198,077	$1,582,689,423	$1,476,516,225	$638,568,095	$612,035,166	$1,396,208,667	$1,332,646,686
Passenger	e 670,547,767	f 690,501,232	357,132,567	362,551,904	91,627,435	99,799,155	221,787,765	228,150,173
Mail	g 110,745,985	73,323,366	43,469,519	28,058,387	17,375,191	12,669,317	49,901,275	32,595,662
Express	108,417,561	101,781,368	50,074,425	46,791,089	16,597,352	15,160,933	41,745,784	39,829,346
All other transportat'n	159,682,219	155,000,505	92,675,452	87,700,697	10,990,594	10,783,094	56,016,173	56,516,714
Incidental	101,174,444	93,239,672	51,096,430	46,433,421	12,168,300	12,385,257	37,909,714	34,420,994
Joint facility—Cr.	10,008,188	9,993,813	3,317,712	3,816,111	1,599,289	1,445,429	5,091,187	4,732,273
Joint facility—Dr.	2,929,384	3,190,451	733,996	1,031,360	316,771	324,976	1,878,617	1,834,115
Railway operating revenues	4,775,112,965	4,541,847,582	2,179,721,532	2,050,836,474	788,609,485	763,953,375	1,806,781,948	1,727,057,733
Expenses:								
Maintenance of way and structures	655,499,440	639,020,840	273,670,491	264,442,810	113,420,695	110,909,869	268,408,254	263,668,161
Maintenance of equipment	907,047,725	878,235,890	431,871,026	409,375,532	158,319,520	156,284,944	316,857,179	312,575,414
Traffic	97,414,365	94,165,107	37,080,984	35,134,280	17,715,692	18,058,084	42,617,689	40,972,743
Transportation	1,574,118,927	1,558,869,275	745,706,457	730,391,957	246,474,564	251,047,074	581,937,906	577,430,244
Miscellaneous operat'ns	44,616,745	42,392,317	20,385,638	19,615,030	4,950,646	5,222,227	19,280,461	17,555,060
General	145,557,530	145,252,507	63,500,716	64,964,647	24,541,900	24,250,996	57,514,914	56,036,864
Transportation for investment—Cr.	9,879,081	11,567,307	2,336,143	1,963,307	793,952	967,803	6,748,986	8,636,197
Railway operating expenses	3,414,375,651	3,346,368,629	1,569,879,169	1,521,960,949	564,629,065	564,805,391	1,279,867,417	1,259,602,289
Net revenue from railway operations	1,360,737,314	1,195,478,953	609,842,363	528,875,525	223,980,420	199,147,984	526,914,531	467,455,444
Railway tax accruals	310,914,371	286,695,002	132,783,934	121,337,516	55,429,676	52,054,800	122,700,761	113,302,686
Uncollectible ry. revs.	857,732	959,785	346,657	476,215	203,210	170,531	307,865	313,039
Railway operating income	1,048,965,211	907,824,166	476,711,772	407,061,794	168,347,534	146,922,653	403,905,905	353,839,719
Equipment rents—Dr. balance	69,963,610	68,881,519	36,651,023	36,220,275	d 2,210,254	d 1,200,962	35,522,841	33,862,206
Joint facility rent—Dr. balance	18,922,901	18,369,695	9,539,764	9,348,654	1,825,663	1,623,597	7,557,474	7,397,444
Net railway operating income	960,078,700	820,572,952	430,520,985	361,492,865	168,732,125	146,500,018	360,825,590	312,580,069
Ratio of expenses to revenues (per cent)	71.50	73.68	72.02	74.21	71.60	73.93	70.84	72.93

a Includes $3,670,423 sleeping and parlor car surcharge. b Includes $3,845,849 sleeping and parlor car surcharge. c Includes approximately $2,008,547 back railway mail pay. d Deficit or other reverse items. e Includes $31,046,726 sleeping and parlor car surcharge. f Includes $30,508,559 sleeping and parlor car surcharge. g Includes approximately $27,754,902 back railway mail pay.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

ings, as its representative on such a committee.

The league also submitted separately a memorandum by Mr. Roberts taking certain exceptions to the report on depreciation, which was not acceptable to the league in that it rejected his "alternative plan"; and suggesting that the subject be further studied either by the committee proposed as to accounting rules or by another committee. The League believes that it would be "better to forego depreciation accounting entirely than to adopt methods which are lacking in sound principle merely for the sake of making the gesture of accounting for depreciation" and that "the rewriting of the property investment accounts appeals to us as being perhaps unnecessary and certainly undesirable."

Survey of Commercial Stocks of Coal

Commercial stocks of bituminous coal used largely for industrial purposes amounted to 37,500,000 tons on October 1, 1929, compared with 41,100,000 tons on October 1, 1928, and with 33,100,000 tons on July 1, of this year, according to the quarterly survey just completed by the United States Bureau of Mines, Department of Commerce. Exports during the third quarter of 1929 averaged 410,000 tons a week against 342,000 tons in the previous quarter and 399,000 tons during the same period of last year. The weekly rate of home consumption during the third quarter amounted to 8,713,000 tons a week as compared with 8,651,000 tons in the previous quarter.

In addition to the stocks in the hands of consumers there were 9,896,825 tons of bituminous coal on hand on the docks of Lake Superior and Lake Michigan on October 1, 1929, as compared with 6,629,262 tons on July 1, 1929.

According to the American Railway Association, stocks of railroad coal on October 1 amounted to 6,739,000 tons. In comparison with the quantity on hand three months ago, this is an increase of 342,000 tons, but is considerably less than the tonnage held by the railroads in other recent years. The stocks on comparable dates in recent years are shown below.

October 1, 1923	17,663,000
October 1, 1924	13,166,000
October 1, 1925	11,206,000
October 1, 1926	11,214,000
October 1, 1927	16,510,000
October 1, 1928	9,873,000
July 1, 1929	6,397,000
October 1, 1929	6,739,000

At the rate of consumption prevailing in the third quarter of the year the stocks held by railroads on October 1 were sufficient to last 20 days. By railroad regions, the supplies were as follows: New England, 18 days; Great Lakes, 18 days; Central Eastern, 11 days; Pocahontas, 7 days; Southern, 17 days; Northwestern, 51 days; Central Western, 17 days; and Southwestern, 6 days.

The American Railway Association reported that on October 1 there were 751,000 tons of unbilled coal on wheels waiting shipment. In comparison with July 1, this is a decrease of 382,000 tons.

Traffic

The Central of New Jersey has contracted with the L. C. L. Corporation for the use of its freight containers.

Oral arguments were heard by the Interstate Commerce Commission on October 31 on the proposed report by W. P. Bartel, director of the Bureau of Service, and Special Examiner C. A. Rice, recommending certain changes in the rules for car-hire settlement on complaints filed by the American Short Line Railroad Association and various individual short lines.

The "Bullet", new express train of the Central of New Jersey between New York City and Wilkes Barre, Pa., makes the run between Jersey City and Wilkes-Barre, 173 miles, at the rate of 41.85 miles an hour, the time through from New York being 4 hours, 20 minutes, instead of 5 hours, 20 minutes, as erroneously stated in these columns last week. The train leaves New York at 6 p. m. and leaves Wilkes Barre, eastbound, at 7 a. m.

The Public Utility Commissioners of New Jersey, granting the petition of the Lehigh Valley, have authorized the station at West Portal to be made a non-agency station; but in the case of Royce Valley, a similar petition is denied, the commission holding that the income of the station is large enough to warrant the maintenance of an agency. The company based its petition partly on the fact that the income of the station is largely from the business of two manufacturers and that these two could be placed on the credit list so that the presence of an agent to collect freight bills would be unnecessary. The commission, however, thinks it not reasonable to thus eliminate the two shippers from the record.

Freight Traffic in September

The volume of freight traffic handled by the Class I railroads in the first nine months of 1929 amounted to 369,601,678,000 net ton-miles, according to reports compiled by the Bureau of Railway Economics. This was an increase of 20,283,895,000 net ton-miles, or 5.8 per cent, above that on the same period last year and an increase of 12,285,490,000 net ton-miles or 3.4 per cent above the total for the same nine months period in 1927.

Railroads in the Eastern district reported an increase of 8.2 per cent compared with 1928, the Southern district 1.5 per cent, and the Western 4.2 per cent.

Freight traffic in September amounted to 44,218,981,000 net ton-miles, an increase of 1 per cent over 1928. It also was an increase of 2.9 per cent above September, 1927.

In the Eastern district, there was an increase of 6.2 per cent in September, compared with the same month in 1928, and in the Southern district 2.4 per cent. The Western district reported a reduction of 5.5 per cent.

The average speed of freight trains in September was 13.1 miles an hour, the highest average for any September on record, and an increase of 0.4 miles above that for September last year.

The daily average movement per freight car in September was 34.3 miles, also the highest for any September on record, exceeding the same month last year by ½ mile, and the same month in 1927 by 1.7 miles.

The average load per car in September this year was 27.1 tons, an increase of 0.4 ton above that for September, 1928, but the same as that for September, 1927.

Lighterage Costs at New York

The Attorney General of New Jersey, acting in behalf of the Governor, has filed with the Interstate Commerce Commission a petition complaining of alleged discrimination against that state in railroad freight rates from the west to New York City; and this petition, filed on October 31, was followed on November 12, by a similar complaint from Milton P. Bauman, chairman of a committee said to represent numerous chambers of commerce and other organizations of shippers in New Jersey. Freight rates from the west to New York, Jersey City, Brooklyn and all points within the area designated as the Port of New York being uniform, the present petitioners complain that, as the railroads bear the expense of lighterage across the Hudson River from New Jersey to New York—three cents per 100 lb., more or less—Jersey City ought to have rates three cents less than those to New York.

These actions on behalf of New Jersey have been followed by a petition from the Merchants' Association of New York City, opposing the New Jersey arguments. The making of uniform rates to all points within the Port of New York is a custom of 50 years' standing, and the Merchants' Association calls attention to the fact that similar action had to be taken on its behalf in 1916.

The Chamber of Commerce of the state of New York has taken action in the same line with that of the Merchants' Association.

While these proceedings are engaging the attention of the public, through the newspapers, the Interstate Commerce Commission has come out this week with its decision, in a proceeding which was begun in 1921, holding that there is no warrant for prescribing a tariff rule requiring terminal charges, such as lighterage or other accessorial charges, to be stated separately. This long pending case had to do with South Atlantic and other ports besides New York, but appears to have covered New York conditions.

New York City interests are also telling their New Jersey neighbors that the plea for lower rates to Jersey City would defeat itself. Any reduction in freight rates, they aver, on the great volume of traffic, especially import traffic, coming to the Port of New York, would at once be used as an argument by Philadelphia and

Baltimore for a larger differential between the rates to those cities and rates to New York. Any diversion of eastbound freight to Baltimore and Philadelphia, they state further, would affect the fortunes of Jersey City as well as those of New York.

Accessorial Services at Atlantic and Gulf Ports

The Interstate Commerce Commission has made public its report on an investigation, ordered April 9, 1921, as to charges for wharfage, handling, storage, etc., at Atlantic and Gulf ports, in which it makes the following findings:

That the rail-water terminal facilities at North Atlantic, south Atlantic, and Gulf ports are not shown to be insufficient or inadequate to accommodate the export, import, coastwise, and intercoastal traffic offered for movement through those ports, but, on the contrary, existing facilities are shown, on the whole, to be reasonably adequate to meet normal traffic needs.

That the record is insufficient to establish that the charges on the traffic under consideration are so low as to impose a burden upon other traffic.

That the record does not warrant the prescription of a tariff rule requiring the accessorial or terminal charges to be stated separately from the line-haul rates on export, import, coastwise, and intercoastal traffic to and from Atlantic and Gulf ports.

That every effort should be made by carriers when leasing their warehouses to shippers to obtain terms no less favorable than would be obtained, under similar restrictions and conditions of use, were the warehouses owned independently of the railroad.

That the practice of according storage space for fertilizer moving in interstate or foreign commerce at rates other than those named in published tariffs, is in violation of section 6 of the interstate commerce act.

The proceeding will be discontinued. The investigation was ordered after the Secretary of War had submitted to the commission a report of the chief of engineers that inadequate and inefficient facilities of the railroads restricted shippers of import and export traffic and that private terminals could not operate in competition with rail carriers which made charges for accessorial services amounting only to about one-fourth of the cost.

Commissioner Eastman wrote a long dissenting opinion, in which Commissioner Porter concurred; and Commissioner McManamy wrote an opinion dissenting in part, in which Commissioners Campbell and Taylor concurred. Mr. Eastman expressed the opinion that the record and the report overwhelmingly warrant the prescription of a tariff rule requiring the accessorial or terminal charges to be stated separately from the line-haul rates; and that if the record is not sufficient the proceeding should be re-opened.

Equipment and Supplies

Locomotives

THE TEXAS SOUTH-EASTERN has ordered one locomotive of the 2-8-2 type from the Baldwin Locomotive Works.

THE SOUTHERN PACIFIC is inquiring for 25 Mallet (4-8-8-2) type locomotives and 15 of the 4-8-4 type.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon November 26 at New York for ten 2-8-4 type locomotives and five 4-6-4 type locomotives for the Boston & Albany.

THE KENTUCKY AND INDIANA TERMINAL has ordered eight heavy switching locomotives from the Lima Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of October 5.

THE ILLINOIS TERMINAL COMPANY has ordered a 90-ton combination electric locomotive which will derive its power for operation from a trolley, storage batteries or a furnace-oil engine-generator plant. The locomotive will be built by the St. Louis Car Company, the electric equipment being furnished by the General Electric Company, the storage batteries by the Exide Storage Battery Company and the furnace-oil engines by the Buda Company. This is a duplicate of the unit now under test at the Illinois Central's Randolph Street terminal at Chicago.

Freight Cars

THE ST. LOUIS-SAN FRANCISCO is inquiring for 300 underframes and 300 superstructures.

THE NORTH AMERICAN CAR CORPORATION has ordered five tank cars of three compartments and 6,000 gal. capacity from the American Car & Foundry Co.

THE UNION TANK CAR COMPANY has ordered 500 tank cars of 12,000 gal. capacity and 500 tank cars of 10,000 gal. capacity from the American Car & Foundry Company

THE TEXAS COMPANY is inquiring for 300 insulated tank cars of 10,000 gal. capacity for carrying asphalt, also for 150 tank cars of 12,000 gal. capacity and 50 insulated tank cars of 10,000 gal. capacity.

THE MICHIGAN CENTRAL has ordered four oil-electric locomotives for use in Chicago. These locomotives will be equipped with 300-hp. Ingersoll-Rand oil engines and 200-kw. generators made by the General Electric Company and will be assembled by the American Locomotive Company. They are similar to the 35 ordered by the New York Central and reported in the *Railway Age* of September 7.

Passenger Cars

THE NEW YORK CENTRAL is inquiring for 12 rail motor cars.

THE GREAT NORTHERN has ordered two dining cars from the Pullman Car & Manufacturing Corporation, in addition to the two reported in the *Railway Age* of July 13.

THE BALTIMORE & OHIO has ordered 50 coaches from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of November 2.

Iron and Steel

THE DENVER & RIO GRANDE WESTERN has ordered 15,000 tons of rails from the Colorado Fuel & Iron Company.

THE UNION PACIFIC has ordered 500 tons of structural steel for a viaduct at Omaha, Neb., from the American Bridge Company.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has ordered 850 tons of structural steel for miscellaneous bridge work from the Virginia Bridge and Iron Company.

THE CHICAGO & NORTH WESTERN has ordered 52,000 tons of rails, of which 36,000 tons were placed with the Illinois Steel Company and 16,000 tons were ordered from the Inland Steel Company. In addition 10,000 tons were ordered by the Chicago, St. Paul, Minneapolis & Omaha, from the Bethlehem Steel Company.

Signaling

THE CANTON RAILROAD COMPANY has contracted with the Union Switch & Signal Company for the installation of two interlockings at crossings with the Baltimore & Ohio in Canton (Baltimore), Md.

THE TENNESSEE COAL, IRON & RAILROAD COMPANY has ordered from the Union Switch & Signal Company material for automatic block signaling on its line between Bayview, Tenn., and Steeley. The order includes eight color-light signals, and flashing signals for highway crossings.

Miscellaneous

THE WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY has received an order for 25 type N.A.B. Nofuz panelboards, totaling approximately 450 circuits, from the United Engineers & Constructors, Inc., for use in the Chesapeake & Ohio building at Huntington, W. Va. These panelboards are equipped with circuit breakers instead of the conventional switch and fuse for controlling the branch circuits.

Supply Trade

J. E. Freeman, formerly manager of the Par-lock Appliers, Chicago, has been elected vice-president of the **Tnemec Paint & Oil Company,** with headquarters at 205 W. Wacker Drive, Chicago.

The **Brown Wood Preserving Company,** Louisville, Ky., has been organized as a subsidiary of the **W. P. Brown & Sons Lumber Company.** The new company has purchased 93 acres of land at Strawberry, south of Louisville, where it will install a creosoting plant for treating lumber, ties, timbers and forest products.

The **General Refractories Company,** Philadelphia, Pa., has recently appointed the **Harris Pump & Supply Company,** 319-21 First avenue, Pittsburgh, Pa., as their dealer representatives in the Pittsburgh district. The territory to be covered by the Harris Company includes western Pennsylvania and Maryland, northern West Virginia and eastern Ohio.

Joseph P. Fletcher, manager of the Buffalo office of the **Independent Pneumatic Tool Company,** has been appointed manager of the Philadelphia office of this company to succeed the late A. L. Schuhl. **W. O. Becker,** who has been connected with the Toronto office, has been named manager of the Buffalo office to succeed Mr. Fletcher.

Arthur C. Allshul, formerly manager of the Buffalo plant of **Joseph T. Ryerson & Son, Inc.,** has been appointed manager of their new unit in the Philadelphia district. **Clarence S. Gedney,** who has been connected with the specialty sales division of the Ryerson business in the Chicago territory, has been named as manager of the Buffalo plant to succeed Mr. Allshul.

Frank P. Walsh has been appointed manager of the newly opened district office of the **Whiting Corporation** at 1442 Syndicate Trust building, St. Louis, Mo. Mr. Walsh will have charge of this company's sales in a territory comprising Missouri, Arkansas and Oklahoma, Southern Illinois and western Iowa and Nebraska.

Obituary

L. S. Carroll, vice-president in charge of purchases of the American Locomotive Company at New York, died suddenly on November 14.

Joseph W. Donner, secretary and general superintendent of the Donner Steel Company, died at Buffalo, N. Y., on November 9.

Henry A. Coles, Atlanta district manager of the Westinghouse Electric & Manufacturing Company, died recently at New Orleans, La., of heart failure. Mr. Coles was born in Tallwood, Va., on August 17, 1870. His education consisted of private instruction and one year at Roanoke College, followed by three years in an engineering course at the University of Virginia. Shortly after his graduation, Mr. Coles entered the employ of the Edison General Electric Company, from which he went to the Westinghouse Electric & Manufacturing Company. He was transferred to the sales department of that company in June 1897 and stationed at Atlanta. In 1911 he was made manager of the railway and lighting division there and in September 1914 was appointed district manager, the position which he held at the time of his death.

Charles Brearley Moore, president of the Ajax Hand Brake Company, Chicago, chairman of the board of the Oxweld Railroad Service Company and vice-president of the Youngstown Steel Door Company, died in Evanston, Ill., on November 9 from an illness that had been lingering since June. He was born at Macomb, Ill., on August 28, 1874, and graduated from Lake Forest University, Lake Forest, Ill., in 1895. In this year he entered the contracting and building business under the firm name of C. B. Moore & Co., and some time later engaged in the manufacture of heating apparatus with the Columbia Heating Company. In January 1902, he joined in the organization of the American Locomotive Equipment Company, of which he was general manager until 1910. At that time he organized the American Arch Company of New York and served as vice-president until 1912, when he assisted in the organization of the Oxweld Railroad Service Company, occupying the position of vice-president until November, 1929, when he was elected chairman of the board. From 1912 to 1917 he was also vice-president of the Boss Nut Company. In 1922 he organized the Ajax Hand Brake Company, of which he was president at the time of his death. He was vice-president of the National Car Equipment Company and president of the American Steel Door Company, which was organized in 1923. He has been vice-president of the Youngstown Steel Door Company since 1924.

C. B. Moore

Construction

ABILENE & EASTERN.—The secretary of state of Texas has approved the charter of this company which has been formed for the purpose of constructing a railroad between Cross Plains, Tex., and Abilene, about 45 miles. The proposed railroad, of which Frank Kell, president of the Wichita Falls & Southern, is president, will connect with the Missouri-Kansas-Texas at Cross Plains.

BALTIMORE & OHIO.—A contract for the construction of a 500-ton four-track reinforced concrete automatic electric coaling station and gravity sand handling plant at Fairmont, W. Va., has been awarded to the Ogle Construction Company, Chicago.

BOSTON & MAINE.—A contract has been let to the Roberts and Schaefer Company, Chicago, for the construction of an automatic sand drying plant and a 2,800-cu. yd. enclosed sand storage plant at the Somerville engine house, Boston, Mass.

BOSTON & MAINE.—An extensive $3,000,000 improvement program on this company's main lines in northern New England has been announced by Acting President T. N. Perkins. The plans, which were worked out by the late President Hannauer, involve the rebuilding of many bridges, the strengthening of all other bridges and extensive grade revisions to permit operation of the heaviest freight and passenger equipment on the Connecticut River division between Greenfield, Mass., and White River Junction, Vt., and on the main line of the Southern division from Boston through Nashua, N. H., and Manchester to White River Junction. On the Connecticut River lines new steel bridges are to be constructed over the Connecticut river north of the present bridge at Windsor, Vt., over the West river one mile north of Brattleboro, Vt., over Saxtons river one mile south of Bellows Falls, Vt., and over the canal at Bellows Falls. The Sugar River viaduct at West Claremont, N. H., will be rebuilt 20 ft. higher than at present, all other bridges on the division will be strengthened and extensive fills will be provided to eliminate sags and allow for grade revision. On the Southern division there will be new bridges over the Nashua river just north of the union station at Nashua, N. H., at Thornton's Ferry, N. H., over the Souhegan river at Merrimack, N. H., and over the Merrimack river at Goffs Falls, N. H., and at Hooksett, N. H. Work on the various projects will be started immediately and will be completed within a year.

CHICAGO & NORTH WESTERN.—A contract has been let to the Ogle Construction Company, Chicago, for the construction of a two-track mechanical ash handling plant at South Janesville, Wis.

CHICAGO & NORTH WESTERN.—A contract for the construction of an addition to the roundhouse at Council Bluffs, Iowa, has been let to G. A. Johnson & Son, Chicago, at a cost of about $50,000.

DELAWARE & HUDSON.—The Public Service Commission of New York has approved estimates of cost totaling $83,-131, including land and damages, in connection with the elimination of the Klondike crossing in Cobleskill, N. Y.

ERIE.—The Starin avenue crossing, the only grade crossing on this company's tracks in the northerly section of Buffalo, N. Y., has been designated for elimination by the Public Service Commission of New York. The elimination, which will cost approximately $126,000, exclusive of land and damages, will be accomplished by raising the grade of the Erie tracks and carrying the avenue under the tracks on the grade established by the city.

GALVESTON WHARF COMPANY.—This company is receiving bids for the construction of the superstructure and the installation of equipment for a reinforced concrete grain elevator at Galveston, Tex. It includes a steel shed 84 ft. by 282 ft., four receiving elevator legs and sixteen power grain shovels.

GREAT NORTHERN.—This company has announced plans for the construction, at a cost of about $600,000, of a 3,000,000-bu. capacity addition to its grain elevator, which is operated under lease by A. D. Thomson & Co., at Superior, Wis. When the addition is completed the elevator will have a total storage capacity of 13,000,000 bu. The new construction will consist of 239 circular bins, each 110 ft. high and 14 ft. in diameter, with a capacity of 12,500 bu. each.

GULF & WEST TEXAS.—The Railroad Commission of Texas has approved the proposal of this company, which is now pending before the Interstate Commerce Commission, for the construction of a railroad between San Antonio, Tex., and San Angelo.

MISSOURI PACIFIC.—A contract has been let to the Winston Brothers Company, Minneapolis, Minn., for grading and track alinement in connection with grade revision at Lyndon, Kan., and Madeline and between Rapp, Kan., and Admire. These projects involve the excavation of about 323,000 cu. yd. of earth and 66,000 cu. yd of rock.

MOBILE & OHIO.—This company has rejected all bids received recently for the construction of a brick and stucco passenger station at West Point, Miss. It is probable that the project will be undertaken by company forces.

NEW YORK CENTRAL.—This company has applied to the Interstate Commerce Commission for authority for a change of line and the abandonment of certain trackage between East Syracuse and Syracuse, N. Y., in connection with a grade separation plan required by an order of the New York Public Service Commission. The application is for permission to remove the right of way of the main line and of the Chenango and Rome, Watertown & Ogdensburg branches of the New York Central from their present locations in the downtown section of Syracuse to a new line farther north along the present right of way of the West Shore. Some new track construction will be required to connect existing main and branch lines of the New York Central with the West Shore tracks, while the necessary grade separation will be accomplished by elevating the track structure along the West Shore route for most of the distance within the city limits. The complete plan, which has been under consideration for some years by officers of the city and the railroad, includes the construction of a new passenger station on a site north of the present station, and involves a total expenditure estimated at approximately $30,000,000.

NEW YORK CENTRAL.—Contracts let by this company during the past month are as follows: For the construction of a commissary building, plans for which were announced in the *Railway Age* of August 24, at 161st street and Morris avenue, New York, to Babor-Comeau & Company, Inc., New York; grading for tracks for the Chevrolet Motor Corporation at Philipse Manor, N. Y., to the Walsh Construction Company, Davenport, Ia.; for the construction of additional engine house facilities at Gardenville, N. Y., to E. P. Muntz, Inc., Buffalo, N. Y.; for the construction of new duct lines and retaining walls at Mt. St. Vincent, N. Y., to Edwards & Flood, Inc., of Brooklyn, N. Y.; for the building of platforms, canopies, etc., at West 138th street, New York City, to the Edward J. Duffy Company, Inc., New York City; for the manufacture, delivery and erection of cranes for use at Harmon, N. Y., to the Shepard-Niles Crane & Hoist Corporation, New York; for cranes for use in electric shop at Harmon, N. Y., to Manning, Maxwell & Moore, Inc., New York City; for the construction of car retarder towers at Gardenville, N. Y., to Wright & Kremers, Inc., Niagara Falls, N. Y., for the construction of additional engine house facilities at Utica, N. Y., to the J. F. Fitzgerald Construction Company, Inc., of Boston, Mass., and for repairs to Riverside Drive wall, New York, to the P. T. Cox Contracting Company, Inc., of New York.

PENNSYLVANIA.—A contract has been let to the Ogle Construction Company, Chicago, for the construction of a 500-ton four-track reinforced concrete automatic electric coaling station and sanding plant at Bradford, Ohio, and a similar coaling station and sanding plant of 300 tons' capacity at Indianapolis, Ind.

PENNSYLVANIA.—Contracts have recently been awarded by the Pennsylvania to Austin Givens, Pittsburgh, Pa., for the demolition, at an approximate cost of $35,000, of the building of the Central Elevator Company, located on Eleventh street, Pittsburgh; to Kuhn, Smith & Harris, Inc., New York City, for the construction of a new kitchen and alterations of the lunch room of the Savarin restaurant in the Pennsylvania Station, New York, N. Y., at a cost of about $93,-000, and to James McGraw Company, Philadelphia, Pa., for additions to the passenger station at Harrisburg, Pa. Included in this work, which will cost about $55,000, are the construction of an extension to the concourse, stairways to train platforms, platform shelters, ramps and a tunnel and enclosure at the west end of the ramps.

QUANAH, ACME & PACIFIC.—The Interstate Commerce Commission has issued a certificate authorizing the construction of an extension from Matador, Tex., in a northwesterly direction about 15 miles.

SAND SPRINGS.—The general contract for the construction of a freight station and loading dock at Sand Springs, Okla., has been awarded to J. R. Forner, Tulsa, Okla.

ST. LOUIS-SAN FRANCISCO.—A contract for the construction of two 200-ton two-track reinforced concrete automatic electric coaling stations, one at Chafee, Mo., and the other at Carbon Hill, Ala., has been awarded to the Ogle Construction Company, Chicago.

SOUTHERN PACIFIC.—The Interstate Commerce Commission has authorized Morgan's Louisiana & Texas R. R. & S. S. Co., and the Texas & New Orleans, to acquire from the South Coast Company, a right of way and to construct on it a railroad extending from a point between Southdown, La., and Houma across the intercoastal canal, 1 mile, continuing to the margin of the Bayou Grand Caillou and thence southward to the Ashland Refinery, 7.3 miles. The cost of the line is estimated at $223,418.

SPRUCEMONT NEVADA.—This company, which has been organized to build a line from a connection with the Western Pacific at Ventosa, Nev., to Sprucemont, Nev., 23.5 miles, has applied to the Interstate Commerce Commission for a certificate authorizing the construction. J. T. Gregory, Elko, Nev., is president of the company.

TERMINAL RAILROAD ASSOCIATION.—This company and the city commissioners of East St. Louis, Ill., are considering the construction of a new union passenger station in that city. The tentative plans contemplate the rerouting of all passenger trains into St. Louis, Mo., from the east, and the construction of a station at a cost of about $600,000. New approaches to the station site and to the eastern end of the Municipal bridge over the Mississippi river would require a considerably larger expenditure.

WILLS POINT-PALESTINE.—Business interests in northeastern Texas contemplate the formation of a company for the construction of a railroad from Wills Point, Tex., on the Texas & Pacific, to Palestine, on the International-Great Northern, about 77 miles, to serve a new oil field in the vicinity of Grand Saline in Van Zandt county.

Financial

ATLANTIC COAST LINE.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $5,927,000 of its series A, 4½ per cent, general unified mortgage 50-year bonds in reimbursement for capital expenditures.

BALTIMORE & OHIO.—*Acquisition of B. R. & P.*—The Interstate Commerce Commission has assigned this company's application for authority to acquire control of the Buffalo, Rochester & Pittsburgh for oral argument at Washington on December 19. The Delaware & Hudson has filed a statement of exceptions to the proposed report by C. V. Burnside, assistant director of the commission's Bureau of Finance, in this case, declaring that there is no authority in law for the proposal made by Mr. Burnside that the Baltimore & Ohio be allowed to assume temporary control of the Buffalo, Rochester & Pittsburgh in such a way that the commission might later order another allocation of the property. The statement refers to this as a sort of indulgence to violate, during a limited period," the anti-trust and other laws on the subject.

BOSTON & MAINE.—*Stock.*—The Interstate Commerce Commission has authorized this company to issue $7,500,000 of 7 per cent prior preference stock, said stock to be exchanged for such of the company's mortgage bonds up to that amount as are offered for conversion, at the rate of 5 shares of $100 par stock for each $500 bond. The authorized issue of stock will be the maximum amount required to meet the conversion privilege on the company's bonds for the year 1930. The prior preference stock is entitled to cumulative dividends at the 7 per cent rate before dividends are payable on any other class of stock. The issue is redeemable after January 1, 1930, at 110.

CENTRAL VERMONT.—*Reorganization.*—A public hearing was held at St. Albans, Vt., before Examiner Watson of the Interstate Commerce Commission on November 11, on the petitions of the Central Vermont Railway, Inc., and Canadian National, looking toward the reorganization of the Central Vermont Railway Company, which has been in receivership since December 12, 1927.

The application of the Central Vermont Railway, Inc., asks for the ownership and operation of the properties of the Central Vermont Railway Co., and subsidiaries in Vermont, Quebec, Massachusetts, Connecticut and New York, while the application of the Canadian National seeks authority to own all of the stocks, bonds and debentures of the new, and to have the same intimate relations with the new company as enjoyed with the company now in receivership.

Receiver George A. Gaston, vice-president of the Central Vermont Railway, Inc., testified as did Edmund Deschenes, comptroller of the railway.

CHICAGO & NORTH WESTERN.—*Common Dividend Increased.*—Directors of this company have announced an increase of $1 in the annual dividend rate on common stock, putting it on a $5 basis.

DULUTH, MISSABE & NORTHERN.—*Excess Income.*—The Interstate Commerce Commission has cancelled the oral argument set for December 17 on the ascertainment of this company's net income for recapture purposes and has assigned the case for further hearing at Washington on December 3 before Examiner Woodrow. The excess income proceeding relating to the Duluth & Iron Range has been set for hearing at the same time.

GRAND TRUNK WESTERN.—*Operation and Securities.*—The Interstate Commerce Commission has authorized this company to operate the lines formerly owned and or operated by its constituent companies or by the Canadian National in Michigan, Indiana, Illinois and Wisconsin, including that portion of the Chicago, Kalamazoo & Saginaw operated under lease and including also the car ferries and terminal tracks formerly owned and operated by the Grand Trunk Milwaukee Car Ferry Co. The Grand Trunk Western is also authorized to acquire control of the Cincinnati, Saginaw & Mackinaw by lease and of the Detroit & Toledo Shore Line and Detroit Terminal Railroad by purchase of capital stock. The railway is authorized to issue no-par-value stock which, at an assigned value of $25 a share, would equal $13,815,998; $22,348,454 of 6 per cent cumulative preferred stock of the par value of $100; $31,947,000 of first and general mortgage bonds, series A; and $10,000,000 of gold debentures, series A. This authority is granted in connection with the Grand Trunk Western's unification of its various properties. The Canadian National is authorized to acquire control of the G. T. W. by receiving the latter's stock in exchange for that of the constituent companies and for certain other assets of the C. N. Action is deferred in respect to the issue of $651,546 of 6 per cent cumulative preferred stock and $13,052,016 of first and general mortgage bonds, series A.

HILL CITY.—*Resumption of Operation.*—This company, which was authorized by the Interstate Commerce Commission last year to abandon operation over its line from Hill City to Mississippi Junction, Minn., 17.5 miles, and under trackage rights over the Great Northern from Mississippi Junction to Swan River, 6.7 miles, has applied to the commission for authority to resume operation.

LONG ISLAND. — *Abandonment.* — Examiner Thomas F. Sullivan of the Interstate Commerce Commission, in a proposed report, has recommended that the commission grant this company's application for authority to abandon a portion of its Whitestone branch, in Queen's County, N. Y., about 4 miles, on the condition that necessary truck and bus service be established, or that the application be denied in the event of an expression of willingness by the New York Transit Commission to rescind, or extend indefinitely, the effective date of its order of June 2, 1926, requiring elimination of grade crossings on the branch. The report says the area served is now in a state of transition from the service furnished by the railroad to service by the rapid transit system and bus lines and that it would constitute gross waste for the applicant to spend about $2,000,000 for the elimination of grade crossings when the entire branch may be rendered practically useless at any time by the extension of the rapid transit system or the establishment of bus service.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $4,106,000 of first and refunding mortgage bonds, to reimburse its treasury for expenditures from income, and to be pledged as collateral for short-term notes, and also $8,000,000 of similar bonds to reimburse the treasury for expenditures to be made in acquiring for cash $10,000,000 of first and refunding mortgage bonds of the Wisconsin Central. The Wisconsin Central also asked for authority to sell to the Soo for $8,000,000 the $10,000,000 of bonds now pledged as collateral for $7,500,000 of notes due January 1.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—*Stock Dividend.*—The Interstate Commerce Commission has authorized this company to issue $9,600,000 of common capital stock to be distributed pro rata among its present stock holders as a dividend. The company showed that it had expended $28,442,634 out of income for capital improvements. Commissioner Eastman dissented.

NEW YORK CENTRAL.—*Increase in Authorized Capital.*—The stockholders of this company will, it is reported, be asked to approve an increase in authorized capital stock from $500,000,000 to $700,000,000.

NEW YORK CENTRAL.—*Stock.*—The Interstate Commerce Commission has authorized this company to issue $35,669,900 of capital stock, $100 par. The stock will be offered to present stockholders at par on the basis of one of the new shares for each 13 shares now held. The proceeds of the issue will be used in partial reimbursement of the company's treasury for capital expenditures.

NEW YORK, CHICAGO & ST. LOUIS.—*Notes.*—The Guaranty Company of New York, Lee Higginson & Co., Dillon, Read & Co., and Harris, Forbes & Company, are offering $20,000,000 of 3-year 6 per cent gold notes of this company at 100, to yield 6 per cent.

RAILROAD INVESTMENT SHARES.—*New Investment Trust.*—This company has been organized as a contractual, fixed

investment trust confined by charter to railroad common stock listed on the New York Stock Exchange. Trust shares are issued against units of 120 common shares in 30 railroads, each trust share representing one-thousandth interest in one unit. The indenture provides for the creation of a reserve fund of $1,250 per unit. Among the directors of the company are Arthur L. Church, secretary of Baldwin Locomotive Works, and E. D. Hilleary, vice-president of the Reading.

ST. LOUIS-SAN FRANCISCO.—*Lease.*—The Interstate Commerce Commission has authorized this company to acquire control by lease of the properties of the Miami Mineral Belt.

ST. LOUIS-SOUTHWESTERN.—*Acquisition.*—The Interstate Commerce Commission has authorized this company to acquire and operate the railroad properties of the Gideon & North Island, the Deering Southwestern, and the Blytheville, Leachville & Arkansas Southern. The commission has deferred for further consideration the company's application for authority to construct an extension of the Blytheville line, the acquisition of the Arkansas Short Line and the operation under trackage rights over the Missouri Pacific and the Memphis Railway Bridge & Terminal.

SEABOARD AIR LINE.—*Refinancing Plan Approved.*—The Interstate Commerce Commission Division 4, on November 12 approved a report and order approving, subject to certain conditions, this company's plan for a readjustment of its capital structure by the issuance of capital stock without par value and a series of first and consolidated mortgage bonds. Commissioner Eastman dissented. The Seaboard was authorized to issue (1) not exceeding 2,994,420 shares of common capital stock without par value; (2) warrants evidencing rights to purchase 250,000 of these shares; and (3) not exceeding 12,500,000 of first and consolidated mortgage gold bonds, series A; 400,410 shares of the stock to be exchanged for a like number of shares of common stock of the par value of $100 each; not exceeding 375,000 shares of the stock without par value and the warrants to be sold to holders of outstanding common and preferred stock at $40 for one share of stock and a warrant evidencing the right to purchase two-thirds of a share of stock; all or any part of the 375,000 shares of common stock and of the warrants, together with not exceeding $12,500,000 of the bonds to be issued in exchange for 5 per cent adjustment mortgage gold bonds at the rate of 15 shares of stock, a warrant evidencing the right to purchase 10 additional shares of stock, and $500, principal amount of first and consolidated mortgage bonds, for each $1,000, principal amount, of adjustment-mortgage bonds; 250,000 shares of the stock to be delivered to the Guaranty Trust Company of New York, as trustee, for delivery from time to time upon surrender of the warrants and payment for the stock; and not exceeding 1,969,010 shares of the stock to be sold for cash at $12 a share; the proceeds of the 375,000 shares of stock, so far as not required for purposes of the exchange, and the proceeds of the remaining stock after deduction of underwriting commission and costs incident to the proposed issue and exchange to be used for paying funded debt, for making additions and betterments, for working capital, and for other corporate purposes.

The commission also approved a supplemental report and an amendment to certificates issued to the Secretary of the Treasury under which loans now aggregating $14,443,887 were made by the federal government, so as to authorize the extension of maturity dates ranging from 1931 to 1935 to later dates from 1935 to 1938. The release of part of the collateral security for the loans also was approved.

SOUTHERN.—*Equipment Trust Certificates.*—In an application to the Interstate Commerce Commission this company asks authority for an issue of $3,690,000 of 4½ per cent equipment trust certificates, to be offered for sale on competitive bids.

SOUTHERN.—*Clayton Law Proceeding.*—The Interstate Commerce Commission has authorized the New Orleans Joint Traffic Bureau, the New Orleans Association of Commerce, the Board of Commissioners of the Port of New Orleans and the Public Belt Railroad to intervene as parties to the proceedings on its complaint against the Southern for alleged violation of the Clayton law in the acquisition of stock of the Mobile & Ohio and the New Orleans & Northeastern.

SOUTHERN PACIFIC.—*Abandonment.*—In an application to the Interstate Commerce Commission this company asks authority to abandon parts of five short branch lines near Portland, Ore., aggregating about 9 miles.

TENNESSEE.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $100,000 of general mortgage 6 per cent 15-year gold bonds to be sold at not less than par to reimburse its treasury for expenditures not yet capitalized.

UNION PACIFIC.—*Bonds.*—It is reported that this company will meet the maturity of $45,000,000 of Oregon Short Line refunding 4 per cent gold bonds out of current funds, without re-financing.

WESTERN MARYLAND.—*Acquisition.*—The Interstate Commerce Commission has authorized this company to acquire control of the Chaffee Railroad under a lease and by purchase of stock.

Average Prices of Stocks and of Bonds

	Nov. 12	Last week	Last year
Average price of 20 representative railway stocks.	117.17	125.73	127.31
Average price of 20 representative railway bonds..	91.00	91.27	94.50

Dividends Declared

Chicago & North Western.—Common, 2½ per cent; Preferred, 3½ per cent; both payable December 31 to holders of record December 2.

Railway Officers

Executive

N. Terhune, assistant secretary and assistant treasurer of the Great Northern with headquarters at New York, has also been appointed assistant vice-president.

John Coenen has been appointed assistant to the vice-president in charge of operation of the Chicago Great Western, with headquarters at Chicago.

The headquarters of **R. S. Marshall,** vice-president of the Cheseapeake & Ohio and the Hocking Valley, have been removed to Cleveland, Ohio, from Richmond, Va.

J. T. Saunders, newly appointed vice-president in charge of freight traffic of the Southern Pacific system, has been connected with the freight traffic department of that company during his entire period of railroad service, about 26 years. Mr. Saunders was born at Fort Worth, Tex., on May 25, 1884, and gained his first railway experience in September, 1903, as a stenographer on the Southern Pacific. Later he was advanced successively through the positions of contracting freight agent, correspondence secretary to the assistant general freight and passenger agent, chief clerk in the general freight office at Los Angeles, Cal., and assistant general freight agent at San Francisco, Cal. In December, 1921, he was promoted to general freight agent with headquarters at Los Angeles, then being further promoted to assistant freight traffic manager at the same point in August, 1923. Mr. Saunders was promoted to freight traffic manager, with headquarters at San Francisco, in July, 1926, a position he held until his appointment as vice-president on November 1.

J. T. Saunders

F. S. McGinnis, newly appointed vice-president in charge of passenger traffic of the Southern Pacific system, has served in the traffic department of

that road for more than 29 years. He was born on January 25, 1883, at Los Angeles and entered railway service at the age of 17 years as an office boy in the Southern Pacific freight station in that city. During the following 15 years Mr. McGinnis successively filled the positions of Pullman clerk, ticket

F. S. McGinnis

clerk and cashier in the city ticket office and city passenger agent at Los Angeles, commercial agent at Pasadena, Cal., and district passenger agent at Los Angeles. In April, 1915, he was promoted to general passenger agent, with headquarters at the same point, then being further promoted to assistant passenger traffic manager at Los Angeles in August, 1923. Mr. McGinnis was promoted to passenger traffic manager, with headquarters at San Francisco, in July, 1925, his appointment as vice-president becoming effective on November 1.

C. S. Fay, newly appointed vice-president and traffic manager of the Southern Pacific lines in Texas and Louisiana, has been connected with that

C. S. Fay

railway for 40 years. He was born at Minden, La., on October 23, 1867, and after attending the Louisiana State University, entered railroad service as a clerk in the traffic department of the Atlantic system of the Southern Pacific. Mr. Fay occupied various positions in the traffic department during the next 28 years, including those of chief rate clerk, chief clerk assistant, general freight agent, and general freight agent in charge of the Louisiana lines. In 1917 he was promoted to traffic manager of the Louisiana lines and during the period of federal control of the railroads he served as general freight agent of the Southern Pacific lines and the Gulf Coast lines and as chairman of the New Orleans Western District Freight Traffic Committee. In March, 1920, he returned to the Southern Pacific as traffic manager of the Louisiana lines, with headquarters at New Orleans, La., where he remained until January, 1928, when his jurisdiction was extended to include the Texas lines and his headquarters were moved to Houston, Tex.

Financial, Legal and Accounting

Edwin G. Wagner has been appointed assistant secretary and assistant treasurer of the Missouri Pacific, with headquarters at New York.

William T. Kemper, Jr., has been appointed treasurer of the Kansas City, Mexico & Orient in Mexico, with headquarters at Nogales, Ariz.

C. E. Connally has been appointed auditor of traffic accounts of the Pere Marquette, with headquarters at Detroit, Mich., succeeding **A. J. Anderson,** deceased.

H. L. Utter, who retired as secretary and treasurer of the Missouri Pacific on October 1, was born in Morrisville, N. Y., on May 1, 1868. He was educated in the high school at Canandaigua, N. Y. and business school in Poughkeepsie, N. Y., entering the service of the Missouri Pacific in April 1891, and serving with that road continuously for approximately 39 years. From 1891 to 1908, Mr. Utter served as secretary in the office of the secretary and treasurer of the road. On the latter date he was appointed assistant secretary and treasurer. He served in this capacity until 1914, when he was further promoted to the position of secretary and treasurer, which position he held until October 1, 1929, when he was forced to retire from active service on account of ill health. **William Wyer,** who succeeds Mr. Utter as secretary and treasurer of the Missouri Pacific at New York, was born on April 3, 1895, at Concordia, Kan. He was educated at Albany Academy, Albany, N. Y., Yale University, Massachusetts Institute of Technology and the Harvard Graduate School of Business Administration. He began his service with the United States Railroad Administration in January, 1919, as clerk in the operating statistics section. In April of the same year he was appointed clerk in the office of the director general and later in the year he became assistant to the assistant director, division of operation. He was appointed assistant to the comptroller, in charge of the maintenance accounts section, in February, 1920. In September, 1920, Mr. Wyer became assistant superintendent of transportation for the Norfolk Southern. The following year he became statistician to the receiver of the Denver & Rio Grande Western. In January, 1929, he was promoted to the position of assistant to the president of that road. He became vice-president of the Denver & Rio Grande Western and the Texas-New Mexico; vice-president assistant treasurer and assistant secretary of the Gulf Coast Lines, the International Great Northern and the San Antonio, Ulvalde & Gulf in March, 1929.

Operating

Thomas B. Grady, superintendent of the Canadian National Railways, with headquarters at Charlottetown, P. E. I., retired from the service of that road on November 1. Mr. Grady was born in Moncton, N. B., on December 15, 1858. He entered railway service in October 1876, as telegraph operator at Summerside. In February, 1880, he was ap-

Thomas B. Grady

pointed train dispatcher and in May of the same year he became conductor. The following year he was operator and ticket clerk at Summerside and in March, 1896, he became assistant agent at the same point. He was appointed ticket agent in April, 1908, and in June 1913, he became station agent. Mr. Grady served as superintendent from November 1, 1916, until the date of his retirement.

W. H. Dick, who has been promoted to superintendent of the Nebraska-Colorado division of the Chicago, Rock Island & Pacific, with headquarters at Fairbury, Nebr., has been connected with that railroad for more than 28 years. He was born on September 13, 1873, at El Reno, Okla., and first served with the Rock Island as a train dispatcher at Chickasha, Okla., and at

Fort Worth, Tex. In 1914, Mr. Dick was promoted to trainmaster on the Indian Territory division and in 1915 he was transferred to the Pan Handle division. From 1918 to 1929 he served

W. H. Dick

successively as trainmaster on the Oklahoma, the St. Louis-Kansas City Terminal and the Kansas divisions, his promotion to superintendent of the Nebraska-Colorado division becoming effective on October 15.

Daniel J. Deasy, who has been promoted to assistant chief operating officer of the Chicago & Alton, with headquarters at Chicago, has had 34 years railway experience in the United States and Central and South America. He was born at Kennett Square, Pa., on April 23, 1877, and entered railway service on August 4, 1894, as a telegraph

Daniel J. Deasy

operator on the Philadelphia, Wilmington & Baltimore (now part of the Pennsylvania). For a short time in 1900 and 1901, Mr. Deasy was employed as a towerman on the Long Island and in the latter year he became an operator on the Panama Railroad. He was advanced with this company through the positions of dispatcher, conductor, general yardmaster and general agent at Panama City where he remained until January 1910, when he was appointed acting general storekeeper of the Guayaquil & Quito in Ecuador, South America. With this road he also served as chief dispatcher, trainmaster and terminal superintendent until August, 1917, when he entered the insurance business at Chicago. He returned to railway service in 1918 on the Alton in charge of the fire prevention bureau, then being appointed trainmaster in March, 1919. During the period in which he served as trainmaster Mr. Deasy was also engaged in special duty with the traffic department and as yard operation representative of the chief operating officer. His promotion to assistant chief operating officer became effective on October 1.

Traffic

The headquarters of **F. E. Cannon,** general agent of the Chicago, Indianapolis and Louisville, have been removed to Winston-Salem, N. C., from Charlotte.

L. W. Bade, assistant general passenger agent of the Wabash, has been promoted to assistant passenger traffic manager, with headquarters as before at St. Louis, Mo.

Stanley G. Blitz, commercial agent for the St. Louis Southwestern at New York, has been promoted to general eastern agent, with headquarters at the same point.

C. J. Barry has been appointed general agent of the passenger department and **J. F. Scanlon** has been appointed general agent of the freight department of the New York Central at Portland, Ore., a newly created agency.

L. Weiler, freight claim agent of the American Refrigerator Transit Company, has been appointed traffic manager, a newly created position, with headquarters as before at St. Louis, Mo. **J. G. Blair,** chief clerk in the freight claim department, has been promoted to freight claim agent to succeed Mr. Weiler.

C. M. Booth, freight traffic manager of the Pere Marquette, has been promoted to traffic manager, with headquarters as before at Detroit, Mich., a newly created position. **R. P. Patterson,** assistant freight traffic manager, with headquarters at Detroit, has been promoted to freight traffic manager, to succeed Mr. Booth. **George D. Moffett** has been appointed industrial commissioner with headquarters at Detroit.

Robert H. Doutt, division freight agent on the New York Central at Pittsburgh, Pa., has been promoted to assistant general freight agent at that point. **Le Roy C. Howe** has been appointed general agent of the freight department at Toledo, Ohio, succeeding **W. F. Gleason,** who has been transferred to Erie, Pa. Mr. Gleason succeeds **F. L. Talcott,** who retired from active service on November 1. **W. H. Grounds** has been appointed general agent of the freight department at South Bend, Ind., to succeed **Grant Clapperton,** who has been transferred to Pittsburgh. The position of assistant freight traffic manager at Pittsburgh has been abolished following the resignation of **J. J. Monks** to become freight traffic manager of the Pittsburgh & Lake Erie.

Everett D. Davis has been appointed freight traffic manager of the Buffalo, Rochester & Pittsburgh, with headquarters at Rochester, N. Y. Mr. Davis was born on January 18, 1892, at Elizabeth, N. J. He was educated at Hotchkiss School, Lakeville, Conn., and Yale University, entering railway service as clerk in the tariff bureau of the Buffalo, Rochester & Pittsburgh in August, 1914. He was later transferred to a local freight office and in March, 1916, he became soliciting freight agent at Rochester. In December of the same year, he was promoted to division freight agent, with the same headquarters and in March, 1922, he was advanced to the position of assistant general freight agent. The following December he was appointed general freight agent. which position he held until December, 1928, when he was appointed assistant freight traffic manager. Mr. Davis left the service of the Buffalo, Rochester & Pittsburgh in May, 1929, to engage in other business and his appointment as freight traffic manager of that road marks his return to railroad work.

Herbert A. Hinshaw, who has been promoted to general freight traffic manager of the Pacific Lines of the Southern Pacific, with headquarters at San Francisco, Cal., has been connected with that company for nearly 39 years. He was born at Winchester, Ind., on September 3, 1872, and entered railway

Herbert A. Hinshaw

service in 1890, serving until 1906 as an agent for the Southern Pacific at various points. From 1906 to 1911, Mr. Hinshaw acted as traveling freight agent of the Southern Pacific and he was then appointed assistant general manager of the Salem, Falls City & Western, now part of the former road, at Dallas, Ore. In 1912, he was appointed general

freight agent of the Southern Pacific lines in Oregon, including the Corvallis & Eastern, the Pacific Railway & Navigation Company and the Salem, Falls City & Western. Nine years later he was promoted to assistant freight traffic manager of the Northern district of the Southern Pacific at San Francisco.

Eugene W. Clapp, newly appointed general passenger traffic manager Pacific lines, Southern Pacific, with headquarters at San Francisco, has been in the service of that road for 36 years. He was born at Memphis, Tenn., on February 25, 1874, and attended public and private schools in that city and Bell Buckle, Tenn., gaining his first railway experience in 1893 as a stenographer and clerk in the office of the superintendent of the Southern Pacific at Tucson, Ariz. From 1895 to 1915, Mr. Clapp served successively in California, New Mexico and Nevada as a trainman, a ticket clerk, a chief clerk and cashier,

Eugene W. Clapp

an agent and assistant trainmaster, a traveling freight and passenger agent, a district freight and passenger agent, general agent for the Atlantic Steamship Lines and the Sunset Route and assistant general freight and passenger agent for the Southern Pacific and general freight and passenger agent for the Arizona Eastern (now part of the former railroad). He was then promoted to general freight agent of the Southern Pacific at Los Angeles, Cal., where he remained until 1919, when he was transferred to San Francisco. In 1921, he was promoted to assistant freight traffic manager at the same point, and in 1926 he was further advanced to traffic manager at Chicago.

S. G. Reed, who has been promoted to freight traffic manager of the Southern Pacific lines in Texas and Louisiana, with headquarters at Houston, Tex., was born in Franklin Parish, La., on March 26, 1867. He attended Colgate University from 1884 to 1886 and entered railway service in 1888 as local freight agent of the Southern Pacific at Victoria, Tex. Since that time his railroad experience, all of which has been with the Southern Pacific lines, has included 16 years as chief clerk to the general freight and passenger agent of the New York, Texas & Mexican, one year as division freight and passenger agent of Morgan's Louisiana & Texas, four years as division freight

S. G. Reed

agent of the Houston & Texas Central, seven years as assistant general freight and passenger agent of the Sunset-Central lines and two years as corporate land and tax agent of the Texas and Louisiana lines. In 1921, Mr. Reed was promoted to assistant to the traffic manager of those lines at Houston, then being further advanced to assistant traffic manager, in charge of freight traffic, in 1924.

John T. Monroe, newly appointed passenger traffic manager of the Southern Pacific's Texas and Louisiana lines, has been connected with the Southern Pacific for 35 years. He was born on September 24, 1880, at Iola, Tex., and entered railroad

John T. Monroe

service at the age of 13 years as an office boy for the Southern Pacific at Houston. Mr. Monroe advanced through various minor positions in the passenger traffic department, including those of clerk, rate clerk and chief clerk and in 1916, he became assistant general passenger agent at Houston. In the following year he was promoted to general passenger agent of the Texas lines at New Orleans, La., being further advanced to assistant traffic manager in charge of passenger traffic, with headquarters at Houston, on January 1, 1928.

H. C. Hallmark, who has been promoted to assistant general freight traffic manager of the Pacific lines, Southern Pacific, at San Francisco, was born in Lampasas county, Tex., on November 9, 1882, and attended the Tyler Commercial College, Tyler, Tex. He entered railway service in August, 1903, as a stenographer in the accounting department of the Gulf, Beaumont & Kansas City (now part of the Kansas City Southern), and for the following nine years also occupied various minor

H. C. Hallmark

positions in the traffic departments of the Santa Fe, Prescott & Phoenix (now part of the Atchison, Topeka & Santa Fe), the Southern Pacific and the Arizona Eastern. In 1912 Mr. Hallmark was appointed assistant general freight and passenger agent of the Arizona Eastern and in 1919 he became general freight agent of the Southern Pacific at Los Angeles. Two years later he was transferred to San Francisco, then being promoted to assistant freight traffic manager at that point in 1926.

Frank E. Scott, who has been promoted to freight traffic manager of the Southern district, Southern Pacific, at Los Angeles, was born at Glasgow, Scotland, on April 21, 1888, and was educated in London, England. He entered railway service at the age of 20 years as a clerk in the claim department of the Southern Pacific at San Francisco, later serving as a clerk in the accounting department, secretary to the general freight agent, secretary to the freight traffic manager, district freight and passenger agent at Salt Lake City, Utah, chief clerk in the freight traffic department at San Francisco and general agent at Cincinnati, Ohio. In 1921, Mr. Scott was advanced to assistant to the director of traffic of

the Southern Pacific at New York, where he remained until 1923, when he was promoted to general freight agent at Los Angeles. He was further promoted to assistant freight traffic manager, with headquarters at Los Angeles, in July, 1926.

Frank E. Scott

J. H. Mulchay, who has been promoted to freight traffic manager of the Northern district of the Southern Pacific, has occupied major traffic executive positions on the Southern Pacific since 1912. At that time he was appointed assistant general freight agent at Portland. Later he was transferred to San Francisco and in 1921 he was promoted to general freight agent at Portland. Mr. Mulchay was further promoted to assistant freight traffic manager at Portland in 1923, a position he held until his promotion to freight traffic manager of the Northern district on November 1.

J. H. Mulchay

Tom G. Beard, newly appointed assistant freight traffic manager of the Texas and Louisiana lines of the Southern Pacific, was born at Bristol, England, on January 2, 1863, and attended a private school and Sugden House Academy in that country. He entered railway service in 1884 as a stenographer and clerk to the assistant auditor of the Louisville & Nashville and during the following 18 years he served successively in stenographic and clerical positions in the operating department of the Louisiana, New Orleans & Texas (now part of the Illinois Central) and the East Tennessee, Virginia & Georgia (now part of the Southern), and in the freight department of the Houston & Texas Central (now part of the Southern Pacific). Since 1903, Mr. Beard has been assistant general freight agent and, since 1904, general freight agent, Texas and Louisiana lines.

Tom G. Beard

C. L. McFaul, who has been promoted to passenger traffic manager of the Southern district of the Southern Pacific, began his service with the Southern Pacific in 1892 as an agent, telegrapher and operator on the Coast division. After occupying various positions in the operating department he became assistant general manager of the Nevada Central in 1899. Two years later Mr. McFaul returned to the Southern Pacific, then serving as agent on the Coast division, city freight and passenger agent, traveling freight and passenger agent and city ticket agent at San Jose, Cal., and district freight and passenger agent at Salt Lake City and at Fresno, Cal. During federal control of the railways he served under the federal director of the Southern Pacific at San Francisco. In March, 1920, he became general agent at Chicago, then being promoted to general passenger agent at San Francisco in 1923 and assistant passenger traffic manager at the same point. He was transferred to Los Angeles in 1925, a position he held until his promotion to passenger traffic manager of the Southern district on November 1.

C. L. McFaul

J. A. Ormandy, newly appointed passenger traffic manager of the Northern district of the Southern Pacific, entered the service of the Southern Pacific in 1908 at a rate clerk in the joint passenger office at Portland, Ore. Previously he had been connected with the passenger departments of various roads in the Pacific Northwest. In 1911, Mr. Ormandy was advanced to chief clerk in the general passenger department at Portland, then being further advanced to assistant general passenger agent at the same point in 1920, to general passenger agent in 1923 and to assistant passenger traffic manager in 1928.

J. A. Ormandy

F. C. Lathrop, who has been promoted to passenger traffic manager of the Central district, Southern Pacific, at San Francisco, was born at Michigan City, Ind., on April 26, 1872. He entered railway service in 1896 in the traffic department of the Wilmington Transportation Company, then later being advanced through various minor traffic positions. In 1901, Mr. Lathrop became a paymaster on construction on the

F. C. Lathrop

Mexican Central, first entering Southern Pacific service in 1903 as city passenger agent at Los Angeles. From 1905 to 1923, he acted successively as traveling passenger agent and commercial agent at Pasadena, Cal., district passenger agent at Los Angeles, and assistant general passenger agent at San Francisco, and he was then promoted to general passenger agent. Mr. Lathrop was further promoted to assistant passenger traffic manager, with headquarters at San Francisco, in July, 1925.

Nelson Kinell, newly appointed assistant general passenger traffic manager, Southern Pacific, at San Francisco, was born in Sweden in 1881. He attended Bethany College at Lindsborg, Kan., and entered railway service in 1901, as a stenographer and clerk on the Southern

Nelson Kinell

Pacific. From 1907 to 1920 Mr. Kinell occupied the positions of secretary and chief clerk to the passenger traffic manager and he was then promoted to assistant general passenger agent at San Francisco. He was further promoted to general passenger agent in 1925 and to assistant passenger traffic manager in 1927, both positions with headquarters at San Francisco.

Fred E. Watson, who has been promoted to assistant general passenger traffic manager, Southern Pacific, at San

Fred E. Watson

Francisco, was born on December 19, 1885, at Kirkwood, Ill. He entered railway service in 1902 on the Chicago & North Western, becoming a telegraph operator on the Los Angeles division of the Southern Pacific in 1911. From 1912 to 1920 Mr. Watson served successively with that railroad as agent at Pasadena, city passenger agent at Los Angeles, commercial agent at Pasadena and district passenger agent at Pasadena. During the World War he served as a first lieutenant of engineers in the United States Army in France. On March 1, 1920, he was advanced to assistant general passenger agent at Los Angeles, being promoted to general passenger agent at that point in 1923.

H. W. Klein, who has been promoted to general freight agent of the Central district, Southern Pacific, at San Francisco, began service with the Southern Pacific in 1910 as a clerk in the tariff department at San Francisco. He was advanced through a number of positions at San Francisco during the following 11 years, including those of head clerk in the tariff bureau, chief clerk of the general freight department and foreign freight agent. In 1921, Mr. Klein was

H. W. Klein

promoted to assistant general freight agent, with headquarters at San Francisco, a position he held until his present promotion.

J. E. Warren

J. E. Warren, newly appointed assistant to the general passenger traffic manager of the Southern Pacific, Pacific lines, at San Francisco, has been connected with the Southern Pacific for 25 years. He entered its service in April, 1904, as a clerk in the general passenger office at San Francisco. He then occupied various clerical positions in the general passenger department until August, 1923, when he was promoted to chief clerk of that department at San Francisco. In November, 1925, Mr. Warren was promoted to chief rate clerk of the same department, a position he held until his present promotion.

F. H. Hocken, assistant general freight agent of the Western Pacific, with headquarters at San Francisco, Cal., has been promoted to assistant to the freight traffic manager, with headquar-

F. H. Hocken

ters at the same point. **John F. Bon,** assistant general freight agent, has been promoted to general freight agent, with headquarters as before at San Francisco, succeeding **J. D. Mansfield,** deceased. **J. H. Coupin** has been appointed general agent at Oakland, Cal., to succeed **W. G. Curtiss,** who has been transferred to San Francisco.

Mr. Hocken was born at Beaverton, Ore., on April 11, 1883, and after graduating from the Seattle and Pacific College at Seattle, Wash., entered railway service in 1905 as a stenographer and clerk on the Union Pacific. He advanced through various positions in the traffic department of that road, including those of contracting freight agent and chief clerk in the general freight office at Portland, and in 1924 he was promoted to district freight and passenger agent at Spokane, Wash. Mr. Hocken resigned from the latter position on April 1, 1928, to become assistant general freight and passenger agent of the Western Pacific at Salt Lake City, Utah. He was appointed assistant general freight agent in charge of solicitation in the San Francisco territory, and with headquarters at that point, on February 1, a position he held until his promotion to assistant to the freight traffic manager on November 1.

Mr. Bon was born in South Dakota and entered railway service in 1905 as a stenographer on the Union Pacific at Portland. Five years later he became secretary to the freight traffic manager of the Western Pacific at San Francisco and then, after occupying various posi-

tions in the traffic department became connected with the Hill Steamship in-

John F. Bon

terests at San Francisco in 1915. Mr. Bon returned to the Western Pacific during federal control of the railroads and in 1920 he was appointed chief clerk in the general freight department. He was promoted to assistant general freight agent in 1923, his further promotion to general freight agent becoming effective on November 1.

Mechanical

H. P. Allstrand, who has been promoted to principal assistant superintendent of motive power and machinery of the Chicago & North Western, with headquarters at Chicago, has been connected with the mechanical department of that railway for more than 26 years.

H. P. Allstrand

He was born in Council Bluffs, Iowa, September 8, 1885, was graduated from the Missouri Valley, Iowa, high school in 1903, and entered the service of the Northwestern as a machinist apprentice at the latter point on June 2 of that year. Following the completion of his apprenticeship, Mr. Allstrand served for two years as a machinist and as a gang foreman at Missouri Valley, then entering Iowa State College in 1909, from which he was graduated in mechanical engineering in 1913. He then returned to the Northwestern and for the following 11 years served successively as enginehouse foreman at East Clinton, Ill., at South Pekin and at Chicago, as assistant master mechanic at Chadron, Nebr., and as master mechanic at Eagle Grove, Iowa, Belle Plaine and Boone. In 1924, Mr. Allstrand was appointed efficiency supervisor in the mechanical department, with headquarters at Chicago, and in 1927 he was promoted to assistant superintendent of motive power and machinery, with headquarters at the same point. His further promotion to principal assistant superintendent of motive power and machinery became effective on October 1.

A. G. Trumbull, chief mechanical engineer of the Erie, has been appointed chief mechanical engineer of an advisory mechanical committee consisting of the chief mechanical officer of each of the following roads: The Chesapeake & Ohio, Erie, Hocking Valley, New York, Chicago & St. Louis and Pere Marquette. This committee will act in an advisory capacity in all matters relating to the design of new rolling equipment

A. G. Trumbull

to be acquired by the above mentioned roads. Mr. Trumbull will have supervision over the mechanical engineering forces for the advisory mechanical committee, with headquarters at Cleveland, Ohio. Mr. Trumbull was born at Hornell, N. Y., and was educated at Cornell University. He entered the service of the Erie in 1902 as engineer of tests. The following year he became mechanical engineer, which position he held until 1905, when he was appointed assistant mechanical superintendent at Meadville, Pa., later serving in the same capacity on the Ohio division. He was appointed mechanical superintendent of the Ohio division of the Chicago & Erie (part of Erie) in 1907 and in 1912 he was transferred to a similar position on the Erie division. He remained in the latter position until 1914, when he became assistant to the general mechanical superintendent. He was appointed assistant general mechanical superintendent in 1919 and in 1920 was advanced to the position of mechanical superintendent of the Ohio region. Two years later he was appointed chief mechanical engineer.

Purchases and Stores

L. F. Lohmann has been appointed assistant purchasing agent of the Great Northern, with headquarters at Seattle, Wash., succeeding **O. H. Wood,** deceased.

Engineering, Maintenance of Way and Signaling

C. F. Grundy, signal draftsman on the Kansas City Southern at Kansas City, Mo., has been promoted to signal engineer, with headquarters at the same point.

E. H. Thornberry, assistant chief engineer of the Peoria & Pekin Union, has been promoted to chief engineer, with headquarters as before at Peoria, Ill.

Obituary

O. H. Wood, assistant purchasing agent of the Great Northern, with headquarters at Seattle, Wash., died in that city on October 25.

R. J. Cary, vice-president and general counsel of the New York Central Lines, with headquarters at New York, who died on November 6 of heart disease was born on February 6, 1868, at Milwaukee, Wis. He was graduated from Harvard University in 1890 and entered railway service in 1898 as a member of the firm of Cary & Walker,

R. J. Cary

attorneys for the Indiana, Illinois & Iowa (now a part of the New York Central). This firm acted as general solicitors for that road until 1903, after which the firm of Glennon, Cary, Walker & Howe continued as general solicitors. Mr. Cary continued in the general practice of law in Chicago as a member of that firm until March 1, 1920, when he became general counsel for the New York Central, with headquarters at New York. He was promoted to vice-president and general counsel in June, 1927, in which position he served until the time of his death.